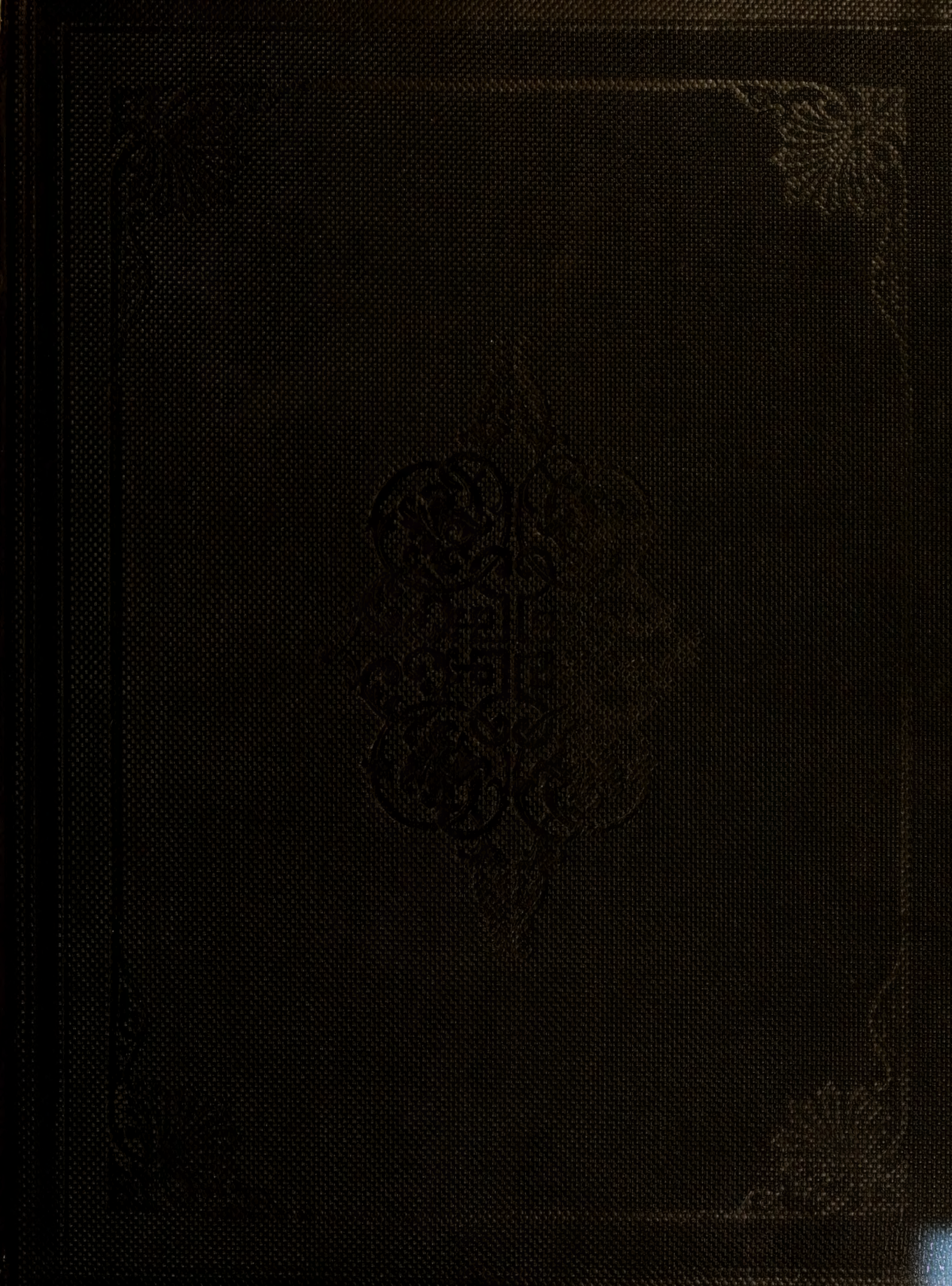

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THE

AMERICAN AGRICULTURIST.

FOR THE

Farm, Garden, and Household.

"Agriculture is the most Healthful, the most Useful, the most Noble Employment of Man."—WASHINGTON.

VOLUME THIRTY-FOUR---FOR THE YEAR 1875.

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AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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THE ICE HARVEST.—*Drawn and Engraved for the American Agriculturist.*

If the comfort and luxury of an ample supply of ice in the household in the hot summer months, or its conveniences and value in the dairy, have been once experienced, the ice harvest will not afterwards be neglected. As compared with its actual value, the cost of ice is frequently very small. The cutting, hauling, and packing away, ought not to exceed 50 cents a ton. A very excellent ice-house, that will contain enough for an ordinary family, can be put up at a very moderate expense, especially if one does a good part of the work himself. If properly cared for, such a building, even if a rough one, will last many years. In most places a supply of ice may be procured from rivers, ponds, or lakes, at the expense of cutting. A case is known to the writer, in which a pond was made by damming a brook, at a cost of two weeks' labor of one man. The owner of this pond received $100 the first winter from selling ice at 25 cents a load. In localities where there are no natural ponds, such a plan is sometimes practicable, and by a little management a pond can be secured, which will not only give a supply of ice for the owner and others, but furnish a place for skating during the winter, and thus unite pleasure and profit.

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German Ivy.—"A. G. R." Of course German Ivy is not *Mikania scandens*, as that is a native plant, but *Senicio scandens*, or as some have it, *S. mikanoides*. You will notice that the article in the Gardener's Monthly is a contribution. Of course the editor knows better, and he could not have carefully examined the article, or he would not have let this pass, or allow the pretty little *Othonna* to be called "bag-wort."

See Page 33.

Calendar for January.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	F	7 30	4 38	1 41	7 24	4 44	1 39	7 19	4 49	1 36
2	S	7 30	4 39	2 41	7 24	4 45	2 41	7 19	4 50	2 37
3	S	7 30	4 40	3 48	7 24	4 46	3 43	7 19	4 51	3 38
4	M	7 30	4 41	4 53	7 24	4 47	4 47	7 19	4 52	4 41
5	T	7 30	4 42	6 0	7 24	4 48	5 53	7 19	4 53	5 46
6	W	7 30	4 43	6 59	7 24	4 49	6 55	7 19	4 54	6 45
7	T	7 30	4 44	sets	7 24	4 50	sets	7 19	4 55	sets
8	F	7 30	4 45	5 43	7 24	4 51	5 42	7 19	4 56	5 54
9	S	7 30	4 46	6 45	7 24	4 52	6 50	7 19	4 57	6 55
10	S	7 29	4 47	7 46	7 24	4 53	7 49	7 19	4 58	7 53
11	M	7 29	4 48	9 08	7 23	4 54	9 10	7 18	4 59	9 13
12	T	7 29	4 49	10 18	7 23	4 55	10 19	7 18	5 0	10 20
13	W	7 28	4 50	11 30	7 23	4 56	11 30	7 18	5 1	11 29
14	T	7 28	4 51	morn	7 22	4 57	morn	7 17	5 2	morn
15	F	7 27	4 53	0 41	7 22	4 58	0 42	7 17	5 3	0 40
16	S	7 27	4 54	1 29	7 22	4 59	1 55	7 17	5 4	1 52
17	S	7 26	4 55	3 15	7 21	5 0	3 10	7 16	5 5	3 5
18	M	7 26	4 56	4 34	7 21	5 1	4 28	7 16	5 6	4 22
19	T	7 25	4 58	5 53	7 20	5 3	5 46	7 15	5 7	5 39
20	W	7 24	4 59	6 58	7 19	5 4	6 51	7 14	5 8	6 44
21	T	7 23	5 0	rises	7 18	5 5	rises	7 14	5 9	rises
22	F	7 22	5 1	6 7	7 18	5 6	6 12	7 13	5 10	6 16
23	S	7 22	5 3	7 17	7 17	5 8	7 20	7 12	5 12	7 23
24	S	7 21	5 4	8 22	7 16	5 9	8 24	7 12	5 13	8 26
25	M	7 20	5 5	9 27	7 15	5 10	9 27	7 11	5 14	9 28
26	T	7 20	5 6	10 28	7 15	5 11	10 27	7 10	5 15	10 27
27	W	7 19	5 7	11 29	7 14	5 12	11 27	7 10	5 16	11 25
28	T	7 18	5 9	morn	7 13	5 13	morn	7 9	5 17	morn
29	F	7 17	5 10	0 30	7 13	5 15	0 27	7 8	5 19	0 24
30	S	7 16	5 11	1 31	7 12	5 16	1 39	7 8	5 20	1 26
31	S	7 15	5 13	2 38	7 11	5 17	2 33	7 7	5 21	2 27

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
New M'n	7	0 24 ev.	0 12 ev.	12 0 mo	11 48 mo.	11 18 mo.
1st Quart	14	4 38 ev.	4 26 ev.	4 14 ev.	4 2 ev.	3 32 ev.
Full M'n	21	0 57 ev.	0 45 ev.	0 33 ev.	0 21 ev.	11 51 mo.
3d Quart.	29	7 50 mo.	7 38 mo.	7 26 mo	7 14 mo.	6 44 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JANUARY, 1875.

The commencement of a new year is the most appropriate time to open a day-book, and begin to keep not only accounts, but a record of events. The farmer or the mechanic who neglects this, is not a business man. Thorough business habits are as needful to the success of a farmer, as for that of any other manufacturer or dealer—for a farmer is both of these. He manufactures, buys, and sells. If he does not know the cost of his wares, whether they be wheat or pork, he can never be sure if he is doing business at a loss or a profit. No elaborate system of book-keeping is needed. A plain daily record or diary of occurrences is first needed. From this, once a week, can be posted into a simple account book, everything that relates to purchases, sales, payments, contracts, and work done upon each crop, in such a way that nothing will be trusted to memory. A daily journal will be a valuable record of facts and experiences, of great use in the future. Such a record for the past year would be profitable reading now, and many hints for one's guidance would be always at hand. What a man knows is but little compared with what he has forgotten. When the year's experiences are written down and indexed at the end of each year, the needed information is ready at a moment's notice. This is the appropriate season for laying out plans for the new year. To have a well-digested plan is the best preparation for a successful year's work. A methodical man, whether farmer or not, is a man of comparative leisure, and yet he accomplishes much more work than the one who is without plan or system. He is rarely the victim of accident, and if one occurs, there is leisure to repair damages before mischief is done. This is a time also to clear off old scores, to pay debts, and settle accounts. Business men complain of the want of money, and look to the farmers for relief. The farmer who owes a hundred dollars in a Western village, has it in his power to set in action an impulse that will be felt through a hundred distinct points, until it reaches one of the great Eastern cities. By paying his debts, he enables another to be paid, and so this goes on, and thousands of such collections gather and swell into a stream, which overflows at the money centers, and straightway we hear of active trade, money in plenty going west again, to purchase grain or pork, and thus the money finds its way back again to the pockets whence it started.

Hints about Work.

Marketing Crops has gone on but slowly this season. Prices are low, not only here, but in all parts of the world. The promise of higher prices is uncertain. The newly sown crops are in splendid condition, and there must be some unusually bad weather for the markets to be affected from this cause. It is a serious question how far it is profitable to hold produce. The farmer has an unquestionable right to hold or sell his grain, as he pleases, but it is well to consider the wisdom of holding it in a spirit of opposition to the absurd demands of those, who question this right. There is a more sensible way of looking at this matter than that, which is to regard the simple profit or loss in holding or selling, in view of the condition and prospects of the markets.

Economy, in everything, upon the farm and in the household, will be needed. We are passing out of a cycle of high prices, and probably entering one of low prices. If profits are to be kept up, expenses must be reduced. Tools must be carefully used and preserved. Little things must be watched as carefully as large ones. The boys and girls must not be ashamed to ride in the farm wagon rather than go in debt for a carriage. Debt must in most cases be religiously avoided. A year or two of hard times may prove a blessing, if they lead to a system of buying only for cash.

Look out for Fire.—At this season much work is done in the barn by the light of a lantern, and the greatest caution should be observed. The lamp should not be trimmed, or filled, or lighted, in the barn or stables, nor near them; do not keep matches in any of the farm buildings, and take every precaution to prevent fires. If there is an insurance upon the buildings, it should not be allowed to expire without renewal, and if there is none, procure one without delay.

Snow should be removed from weak or flat roofs after every storm, lest the weight should be too much for them. It should be also removed from doorways and yards as soon as it stops snowing.

Roads and Paths.—Clear after every snow-fall. Cows and ewes may be seriously injured by wading through deep snow or mud, and heavy in-lamb ewes, falling in the deep snow, are sometimes unable to extricate themselves. It is well to throw down some of the fences, or open gates, in places where drifts may gather, to save the labor of removing the snow, which would accumulate.

Care of Stock.—Liberal feeding will be found of benefit to all kinds of stock. Observe caution with cows in high condition; as they near the period of calving, let their feed be gently laxative, and not stimulating. No corn-meal should be given to such cows. Bran is safe feed, and if there is any sign of fever, a pint of linseed oil, or a dose of salts, should be given, as a precaution against milk-fever. Pure air is of vital consequence to stock confined in stables. Animals will maintain their natural heat better in pure cold air, than in a warm foul one.

Feeding Straw.—Straw is too valuable to be used for bedding, whenever other absorbents, such as sand, swamp muck, leaves, or sawdust can be procured. Horses working moderately may be kept in good condition upon clean, bright straw, cut and mixed with six quarts of meal daily. A feed of long hay and oats may be given on Sundays, to save labor, and as a welcome change. Common sheep will do well fed on straw, with a pint of corn, or a quart of bran daily; the heavier bodied breeds will require a pound of oil-cake meal, or some roots, and at least one feed of hay daily in addition. Sheep are not early feeders, and love to lie late. They need not be fed until after breakfast. Other stock should be fed before breakfast. For cows straw is very poor feed.

Corn Stalks.—Cows will thrive upon well-cured corn stalks. As good butter, both in color and flavor, has been made in winter from cows fed wholly upon cut stalks, with bran and meal, as

when they had the best hay. But the stalks should be cured green, and well saved. One bundle of stalks, cut less than half an inch long, will go as far as four bundles thrown whole to the cows.

Water.—The consumption of dry fodder makes an ample supply of water necessary for the stock. Green fodder contains about 80 per cent (or four pounds out of five), of water. Dry fodder contains about 16 per cent (or one pound only, out of six of fodder) of water. If a cow consumes 20 lbs. of dry, solid matter, a day, in the shape of green fodder, she takes with it 80 lbs., or nearly 10 gallons of water; if this 20 lbs. is in the shape of hay or cornstalks, she takes with it only 4 pounds, or half a gallon of water, and the remainder must be supplied. Many poor animals cruelly suffer from want of water in the winter season, as neglect in watering is common enough.

Lambs.—Early lambs pay proportionately better than any other farm stock. All that is needed to have them in perfection, is tact and care. A lamb twelve hours' old, and on its legs, is able to take care of itself, if kept with the ewe in a small warm pen. A good plan is to have pens not more than four feet square, in a quiet stable, in which to put the ewes a day or two before they yean. In such quiet places there is little risk of losing lambs, by their being disowned or neglected. Of course they need looking after until they are a few days old, when the ewe and lamb may be turned out, and another ewe take the pen.

Ice-Gathering.—Cut the blocks of equal size and regular shape; 16 or 18 inches by 12 is a convenient size; cut equal, so that they can be packed closely. At least one foot in thickness of dry sawdust, cut straw, or chaff should be packed closely around the heap, and two feet over the top of it. The ice-house needs double walls, eight inches apart, filled between with the same sort of material, and a tight roof to shed rain; the eaves may be open, as ample ventilation tends to preserve the ice. The bottom of the ice-house *must* be drained perfectly, and be protected entirely from the access of any current of air. It will not do to raise it above the ground. It is best to have it sunk at least one foot beneath the surface, but all the waste water from the ice must soak or be carried away. The ice-house should be placed upon a rise of ground, and never in a hollow. A house of rough planks or slabs, drained below, ventilated above, and packed at the sides, will keep the ice as well as the most costly one.

Sundry Matters.—Look to the horses in time, and keep them rough shod, or use the Goodenough shoe, which has no caulks, and is the safest shoe we know of for winter or summer use. See that cellars, cisterns, and root pits are safe from frost.... Procure seeds for the spring, before the busy time of the seedsmen arrives, when there may be delay or disappointment. Select seeds from the granary while there is opportunity to choose the heaviest and largest grain. Keep all seeds in a dry, cool place....Watch the outlets of the drains, that they do not become closed up; if there is a swamp on the farm, now is the time to dig ditches through it, drain it, and get out a supply of muck for use next winter....Lay up a stock of fuel for the whole year, in a weather-proof shed, cut and prepared for use....Although a man's work lies chiefly out of doors, let him not neglect to give every possible aid to those who keep the house, and relieve them from work which may expose them to the inclemencies of the weather.

Work in the Horticultural Departments.

With the new year we meet with many new readers, and a word to them may be timely. These hints about work are not intended for professional nurserymen, gardeners, and florists, for such will find very little in them of use. But the large class of cultivators, who are neither, can always find here some seasonable and useful hints. If one is engaged in fruit-growing, market gardening, or in raising flowering plants as a business, we assume that he has the proper books. It is simply the fact, that a fruit-grower can not afford to be without the writings of Barry, Fuller, Quinn, and others, or the market-gardener or flower-grower without the works of Henderson, Quinn, Brill, and others, whose names will be found in our Book List. While these works are absolutely indispensable to those who make these branches of horticulture a business, they are also of the greatest use to the amateur. These notes are not repeated year after year, notwithstanding they must of necessity treat of the same topics. In the spring we plant, and in the later months we harvest, and so far as this goes, there must be a similarity. But each month the hints are freshly and carefully written, and embody a great deal of our own garden experience. It is no news to our older readers, but we may say to our newly acquired friends, that a large garden is kept up almost entirely as an adjunct to the paper, in which are yearly tested new fruits, vegetables, and flowers, and our commendation of particular varieties is almost always the result of actual experience. Our garden is a purely experimental one. We have never sold a plant or seed, and have no commercial interest in any plant whatever. These notes are written for the latitude of New York, and are usually about a month in advance of the season for that locality. Those living further north will have no difficulty, but it may be the case that we come too late for those in warmer places. It is impossible to provide at once for the needs of those in Nova Scotia and those in Florida. There are, however, two periods in garden operations that are safe guides everywhere. "As soon as the ground can be worked," for all early operations, and "corn-planting time," which means, when the ground is warm, and cold nights are over, for sowing or setting tender plants. We try to keep these points in view in giving our hints, and thus make them applicable to all localities. Every one, and especially a novice in gardening, should keep a record of each day's work. An accurate account of each planting and its results, whether favorable or otherwise, will be of great value as a guide to the operations of another year. In the winter months much preparatory thinking and planning can be done. Make all projected changes and improvements on paper drawn to a scale, and then consult the family, boys and girls included, and make them interested in all garden operations. If the orchard or fruit-garden is not mapped, do it while there is leisure. Mark the place of every tree, for labels will get illegible or mis-placed, and a record is the only sure way to keep the names.

Orchard and Nursery.

Trees.—If new orchards are to be set in the spring, the trees should be ordered this winter, when there is abundant time to consider the matter and to secure a proper selection of trees. If there is a nursery near by, at which the desired stock can be had, it is better to purchase there, rather than send to a distance for the trees. Our opinion of the peddlers and agents, has often been given. First-class nurserymen have a reputation which they desire to keep; they are careful not to send out any trees not true to name.

Rabbits and Mice.—See hints concerning these animals last month, and page 19, this month.

Scraping and washing the trunks and larger limbs, will destroy many eggs of injurious insects. Use a wash of common soft soap, thinned to apply readily. The best implement for scraping off the loose bark, is a triangular plate of iron, having 3 inch sides and the edges ground. This may be fastened by its center to a handle 2 to 3 feet long.

Insects.—The eggs of the tent caterpillar may be readily seen on the ends of last year's twigs, and removed now, thus saving much work in destroying their nest next spring.

Fruit.—The very warm and dry autumn just passed, has been unfavorable to the keeping of winter fruit. Ordinarily the fruit matures, *i. e.*, completes its growth and ripens its seeds upon the tree. When placed in the cellar or fruit room, it gradually changes, and sooner or later, according to the variety, mellows, or comes into eating condition. In many localities the fruit matured very early, and by the time it was gathered, it had already made considerable progress towards the second stage, a condition that has been favored by very mild weather since picking time, in which it has been impossible to keep the fruit properly cool. This sudden ripening has caused much fruit to be thrown on the market earlier than usual; there has been a glut, and prices have been low. One lot of Baldwins, and other good varieties, sent by a friend of ours, netted him, after deducting expenses, less than 50 cents per bbl. All that can be done, is to keep the fruit as cool as the weather will allow, without freezing, watch it closely, and sell or use as it comes into condition.

Fruit Garden.

With care in selecting varieties, one may enjoy a succession of fruit each in its season, from the earliest strawberries in June, until the apple, which lasts until fruit comes again. Varieties may be selected and ordered of the nurserymen now, and set out as soon as the spring opens.

Grape Vines.—Prune during mild spells, and save the wood of such as it is desirable to propagate either for home use or for sale. The wood may be kept readily in sand in the cellar, until spring.

Dwarf Trees may be broken by snow and ice, if not looked to after severe storms. If any branches are broken, pare the wound smooth, and then cover with grafting wax, paint, or shellac varnish.

Kitchen Garden.

Manure is the key-stone, the king-bolt, the beginning, middle, and end in a successful garden. It is the one thing of which a wide awake gardener never has enough. The home supply is usually supplemented by purchases, and those who buy should now make contracts with stable keepers, express drivers, and all who keep many horses for the year. The farmer's garden depends upon home supplies. It is too often the case that the best manure goes to the fields, and the garden gets what is left. It will pay to give the best manure to the garden. Unless the heap is so large, that the heat of its fermentation will prevent freezing, the manure should be kept in the barn cellar, or otherwise under cover. Private gardeners may well follow in some things the example of those who grow vegetables for a living. Aside from all the stable manure they can make and buy, they supplement their stock by sweepings from paved streets, the waste of brewers, both spent hops and malt refuse, and keep an eye open for every fertilizing material that will be cheaper than fine bone, dried blood, or guano, of which they all buy more or less.

Muck, if frozen one winter, and then allowed to dry, makes an excellent absorbent in the stables, and if composted with lime, is useful on light lands, deficient in vegetable matter. So with

Leaves, which is one of those things of which the gardener can never have too many, and in some localities they can yet be collected. Used as bedding, they make a valuable addition to the manure heap, and mixed with stable manure, for hot-beds, they are of great use. One-third leaves and two-thirds manure will hardly diminish the activity of the manure, and make it more lasting; reversing the proportions, makes a mild and enduring heat.

Hot-bed and Frame Sashes are now made so cheaply by machinery, that it is often better to buy than to make them. Near New York we pay $1.40, all ready for the glass. In glazing, bed the glass in putty only on the under-side. A good coat of paint finishes the job. Get old sashes in a state to use; reset glass, paint, and, if shaky, put a brace across.

Straw-Mats and Shutters are as necessary as sashes, especially for hot-beds. Not only have we to generate heat by the manure, but to prevent its loss at night. Straw-mats can be readily made in bad weather, and will often be useful for other purposes. Shutters should be made of the lightest stuff, with battens or cleats, and of the size of the sash. In very cold weather a mat with a shutter over it will be found very useful. Plants in

Cold Frames are more likely to suffer from heat

than from cold. The object of putting cabbages, cauliflower, lettuce, etc., in frames, is to keep them dormant, as well as to shield them from excessive cold. If they are stimulated into growth by too much heat, they will be as badly off as if severely frozen. Beginners err in keeping the plants too warm. Air the frames whenever the outside temperature is near 32°, and in mild weather remove the sashes altogether.

Hot-Beds, for sowing seeds, will be needed this month in the Southern States; as the time for making these will differ in each locality, we need only repeat the general rule that they should be started —whether South or North—about six weeks before it will be safe to set the plants in the open ground.

Flower Garden and Lawn.

Evergreens are apt to be bent out of shape, by accumulation of snow in their tops. It should be shaken out while light; in snows heavy enough to cover their lower branches, shovel away and clear them, or they may be broken as the snow hardens and settles. Small evergreens of untested kinds, should have spruce or other evergreen boughs placed around them for a few winters.

Pruning Trees and Shrubs should be done only when necessary. If shrubs are pruned, observe the natural habit of each, and do not expect to make one with curving branches grow erect. It is the variety of form quite as much as variety of color, that gives beauty to a clump of shrubs. Never disfigure an evergreen by cutting away its lower branches.

Greenhouse and Window Plants.

The cultivator of plants under glass, whether it be in the costly conservatory, a modest greenhouse, or even in a kitchen window, has to contend, first, last, and all the time, with various

Plant Insects.—No matter how good the soil, how careful the watering, the plant will not flourish if its vitality is being constantly weakened by insects. These not only live upon the juices of the plant, but some of them cover its leaves with a web, which, though almost invisible, closes the pores through which the plant breathes.

Water, Soap, and Tobacco, are the three chief remedies, and they are readily applied in the greenhouse, but their use is more difficult upon house plants. A bath tub, or a large sink, will allow a plant to be laid on its side and its foliage thoroughly drenched on both surfaces, with slightly warm water from a watering pot or syringe. Ivies, camellias, and other smooth-leaved plants, can have each leaf sponged with soap and water, and then with pure water, and if the bark appears unhealthy, use strong soap and water with a brush—an old tooth-brush will answer. Tobacco infusion is sometimes used, the plant is dipped in it, and a little while after rinsed in water. In greenhouses the house is regularly smoked—at night a pan of coals is covered with damp tobacco stems, and the house filled with a dense smoke, and kept closed until morning. This should be done regularly, at least once a week, whether insects are seen or not. For house plants a smoking box can be easily contrived. A dry goods box, large enough to allow a smoke to be made and not heat the plants too much, will answer. Scale of all kinds can be picked off, and this is the best way to treat the mealy bug, when there are but few plants. Those who love plants, will find little difficulty in keeping them clear of insects —those who do not, had better not keep them.

Camellias and Azaleas need more water as they come into bloom, and care must be taken not to wet the flowers. Keep cool, to prolong the bloom.

Bulbs.—Bring a few pots each week from the cellar, or wherever they are stored, and give water as they develop. When the flower buds begin to push, weak manure water may be used. If it is desired to save the bulbs for planting out, the foliage must be kept growing after the flowers fade.

Dust is one of the great enemies of house plants. If the plants can not be removed while the room is being swept, then contrive a cover of light stuff, or even paper, to put over them. Drench in the bath tub or sink, and use the sponge whenever the leaves are dusty.

Watering.—As many house plants suffer from too much, as from too little water. It is a very common thing to see the soil kept thoroughly soaked from week to week. This will answer for Callas, and a few other marsh plants, but for others nature only makes the ground wet occasionally, and often it becomes very dry before rain comes again. No invariable rules can be given for watering. When a plant is at rest, it needs less than when growing, and even when growing, it is better to let the soil get somewhat dry now and then, before watering. If the soil is full of water, no air can enter, and the roots need air as well as water.

Commercial Matters—Market Prices.

CURRENT WHOLESALE PRICES.

	Nov. 13.	Dec. 12.
PRICE OF GOLD	110 1-4	111 5-8
FLOUR—Super to Extra State	$3 65 @ 5 65	$3 70 @ 5 85
Super to Extra Southern	4 65 @ 8 25	4 80 @ 8 00
Extra Western	4 70 @ 8 50	4 65 @ 8 25
Extra Genesee	5 50 @ 7 75	5 00 @ 7 00
Superfine Western	3 65 @ 4 35	3 70 @ 4 40
RYE FLOUR	4 00 @ 5 25	4 35 @ 5 60
CORN-MEAL	4 00 @ 5 10	4 20 @ 5 00
WHEAT—All kinds of White	1 22 @ 1 38	1 25 @ 1 40
All kinds of Red and Amber	1 02 @ 1 28	1 05 @ 1 30
CORN—Yellow	92 @ 95	89 @ 94
Mixed	83 @ 92	88 @ 96
White	— @ 1 05	89 @ 95
OATS—Western	61 @ 66	67 @ 70
State	60 @ 65½	66 @ 70
RYE	90 @ 95	92 @ 98
BARLEY	1 25 @ 1 55	1 25 @ 1 65
HAY—Bale, ℔ 100 ℔s	55 @ 95	55 @ 95
STRAW, ℔ 100 ℔s	40 @ 65	40 @ 65
COTTON—Middlings, ℔ ℔	14⅝ @ 15	14¾@ 14¾
HOPS—Crop of 1874, ℔ ℔	35 @ 47	35 @ 50
FEATHERS—Live Geese, ℔ ℔	35 @ 65	35 @ 65
SEED—Clover, ℔ ℔	9¼@ 9⅜	9⅞@ 10
Timothy, ℔ bushel	2 75 @ 2 85	2 75 @ 2 85
Flax, ℔ bushel	2 00 @ 2 10	2 15 @ 2 20
SUGAR—Refi'g & Grocery ℔ ℔	6½@ 10	6¼@ 9¾
MOLASSES, Cuba, ℔ gal	36 @ 47	32 @ 45
New Orleans, ℔ gal	63 @ 73	55 @ 65½
COFFEE—Rio (Gold)	15½@ 21	17 @ 19½
TOBACCO, Kentucky, &c., ℔ ℔	8 @ 23	9 @ 25
Seed Leaf, ℔ ℔	7 @ 55	8 @ 60
WOOL—Domestic Fleece, ℔ ℔	28 @ 65	28 @ 65
Domestic, pulled, ℔ ℔	25 @ 52½	27 @ 55
California, clip	16 @ 35	16 @ 38
TALLOW, ℔ ℔	8½@ 9	8¼@ 8¾
OIL-CAKE—℔ ton	45 50 @46 50	43 75 @46 00
PORK—Mess, ℔ barrel	19 50 @20 00	20 62½@20 75
Prime Mess, ℔ barrel	19 25 @20 25	19 50 @20 50
BEEF—Plain mess	9 00 @10 50	9 50 @11 00
LARD, in trcs. & barrels, ℔ ℔	14 @ 15	13½@ 14¼
BUTTER—State, ℔ ℔	25 @ 47	25 @ 45
Western, ℔ ℔	19 @ 35	18 @ 35
CHEESE	6 @ 16	6 @ 16
BEANS—℔ bushel	1 70 @ 2 65	1 60 @ 2 70
PEAS—Canada, free, ℔ bu	1 18 @ 1 25	1 25 @ 1 33
EGGS—Fresh, ℔ dozen	24 @ 32	24 @ 30
POULTRY—Fowls	10 @ 22	10 @ 15
Turkeys—℔ ℔	6 @ 17	6 @ 15
Geese, ℔ pair	1 12 @ 2 25	1 37 @ 2 50
Ducks, ℔ pair	50 @ 1 00	50 @ 80
PIGEONS, ℔ dozen	1 75 @ 2 75	2 25 @ 2 50
WOODCOCK, ℔ pair	50 @ 80	50 @ 65
GROUSE, ℔ pair	40 @ 1 00	40 @ 75
PARTRIDGES, ℔ pair	30 @ 90	30 @ 75
VENISON, ℔ ℔	10 @ 16	10 @ 16
WILD DUCKS, ℔ pair	40 @ 2 00	30 @ 1 75
ENGLISH SNIPE, ℔ dozen	1 25 @ 1 50	— @ —
YELLOW-LEG SNIPE, ℔ doz	50 @ 1 00	— @ —
QUAIL, ℔ dozen	1 50 @ 3 00	90 @ 1 50
PLOVER, ℔ dozen	1 50 @ 2 00	— @ —
HARES, ℔ pair	65 @ 80	50 @ 75
RABBITS, per pair	— @ —	35 @ 40
TURNIPS ℔ bbl	1 00 @ 1 50	1 00 @ 1 25
CABBAGES—℔ 100	3 00 @ 7 50	3 50 @10 00
ONIONS—℔ bbl	2 50 @ 3 50	2 25 @ 3 00
POTATOES—℔ bbl	1 50 @ 2 37	1 75 @ 2 50
SWEET POTATOES—℔ bbl	2 00 @ 3 50	3 00 @ 3 25
BROOM-CORN	6 @ 10½	9 @ 14
GRAPES, ℔ ℔	5 @ 10	3 @ 10
APPLES—℔ barrel	1 00 @ 2 25	1 00 @ 2 25
CRANBERRIES—℔ box	2 50 @10 00	2 25 @10 00
GREEN PEAS, new, ℔ bushel	1 65 @ 2 00	1 65 @ 2 00
SQUASH, ℔ bbl	1 00 @ 1 25	1 25 @ 1 75
CAULIFLOWERS, ℔ dozen	1 00 @ 3 50	1 50 @ 5 00
HORSE RADISH, per bbl	— @ —	5 00 @10 00
PEPPERS, per 100	— @ —	50 @ 1 00

Gold has been up to 112⅜, and down to 110¼, closing December 12th, at 111⅝, as against 110¼ on November 12th. ....Canal navigation having been closed, for the season, at the beginning of the current month, the arrivals of produce from the interior have fallen off materially. The supplies of Breadstuffs available here—though not very heavy—have been quite liberal, as compared with the wants of buyers, which have been generally less urgent, particularly on export account, and prices have been, in most instances, depressed and lower, influenced, in part, by the firmer range of ocean freights, and the unsuccessful strike of the stevedores against a reduction of wages —which circumstances operated against the export business. Toward the close, the stronger range of gold enabled holders to obtain rather better prices on stock wanted for export. Speculative dealings have been renewed in Corn, Oats, and Barley, which served, to some extent, to strengthen values....The Cotton trade has been quite active, but the heavy arrivals of Cotton at the shipping ports, and the unfavorable advices from Liverpool, have led to a slight decline in prices,—the market closing weak....Provisions have been pretty freely dealt in, more especially hog products, largely on speculative account, but at very variable prices. Pork, Lard, and Cut Meats closing easier. Bacon firmer. Beef, Butter, and Cheese, about steady....Wool has been recently in much better demand, chiefly on manufacturing account, closing rather in favor of sellers. The main inquiry has been for domestic fleece and pulled, and for Texas and California product. The current arrivals of California Fall are rather poor as to quality and condition....Hops have been in more request for home use and shipment, and have been on the advance....Hay and Straw have been quiet, at essentially unaltered rates....Seeds have been very moderately sought after. The main call for Clover Seed has been from export buyers, who have recently reduced their bids to our quotations for prime samples....An active trade has been reported in Tobacco, mostly for shipment, at stronger prices, but the market closes rather tamely.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Dec. 13th, 1874, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
RECEIPTS.						
25 d's *this* m'th	367,000	2,376,000	1,404,000	129,000	307,000	1,312,000
26 d's *last* m'th	324,000	3,115,000	1,807,000	104,000	471,000	1,306,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 d's *this* m'th	360,000	3,001,000	2,315,000	92,000	289,000	1,209,000
26 d's *last* m'th	309,000	4,318,000	4,106,000	87,000	385,000	1,504,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 days 1874	367,000	2,376,000	1,404,000	129,000	307,000	1,312,000
25 days 1873	331,000	3,236,000	2,066,000	9 400	587,000	922,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 days 1874	360,000	3,001,000	2,315,000	92,000	289,000	1,209,000
25 days 1873	366,000	3,873,000	3,932,000	106,000	446,000	1,532,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
Dec. 7, 1874	4,513,396	1,220,973	15,925	168,391	890,899	135,622
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	794,722	135,882
Nov. 10, 1873	1,720,338	3,133,896	22,907	232,942	755,153	82,674

4. *Receipts at head of tide-water at Albany each season to Dec. 1st.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1874	165,200	23,791,500	17,723,200	337,600	3,428,400	3,584,500
1873	153,500	22,761,700	18,552,200	950,260	2,153,000	3,385,900
1872	137,300	11,349,100	29,928,700	474,600	4,548,600	5,696,000
1871	290,700	21,313,400	20,042,300	1,107,900	3,839,400	6,639,400
1870	430,400	17,124,700	4,805,100	587,500	3,984,700	6,167,500

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
Nov. 16	8,731	48	1,755	29,843	53,943	94,320
Nov. 23	10,307	67	1,297	29,240	53,559	94,470
Nov. 30	7,935	90	984	23,085	48,937	81,031
Dec. 7	8,028	66	1,086	28,855	51,018	89,053
Dec. 14	6,271	80	1,224	25,709	39,955	73,239
Total for 5 Weeks	41,272	351	6,346	136,732	247,412	432,113
do. *for prev. 4 Weeks*	39,271	236	7,080	119,549	168,409	333,845

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	8,254	70	1,269	23,346	49,442
do. do. *last Month*	9,817	59	1,710	29,887	42,177
do. do. *prev's Month*	10,308	57	2,541	29,748	35,074

Beef Cattle.—The market for the past five weeks has been almost entirely without change. Had it not been, however, for a scarcity of good beeves, there would have been a decline. The sale of poor stock has been dull and slow, and a slight over supply would have brought down rates ½c. per lb. The strong demand for good beeves has been very marked. A year ago choice beeves sold at 12@12½c. ℔ ℔. All through this month they have rated at 13@13½c. very steadily. At the close of the last week of our report, the market was ½c. ℔ ℔ higher, extra holiday beeves selling for 13¾@16c. ℔ ℔ to dress 63 to 65 ℔ cwt., a few were held at 17c., but not sold; good native beeves brought 9@11c. ℔ ℔ to dress 56, and Texas and Cherokees 7½c.@10c. ℔ ℔ to dress 55 to 56 ℔s. ℔ cwt.

The prices for the past five weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
Nov. 16	6½@13½c.	9⅜@10½c.	10 c.
Nov. 23	6½@13¾c.	9½@10½c.	10 c.
Nov. 30	6¾@13½c.	9½@10½c.	10 c.
Dec. 7	6½@13½c.	9½@10½c.	10 c.
Dec. 14	7½@15 c.	10 @11 c.	10½c.

Milch Cows.—There has been a steady demand for cows, with a fair supply; prices are unchanged, good cows selling at $40@$80 per head....**Calves.**—The good supply of cheap poultry has made a dull market for calves, and prices have gradually weakened day by day, without, however, falling off more than a shade. Good hog-dressed veals sold at the close at 12½@13 cts. ℔ ℔., and grassers at $6.00@$6.15 per head....**Sheep and Lambs.**—Good sheep have been firm throughout the past month; lambs have eased off, and are ½c. ℔ ℔, lower. Some Colorado sheep sold for 4@4½c. ℔ ℔; good Canada sheep brought 6½c. ℔ ℔. Closing rates were 5@7c. ℔ ℔., for sheep, and 6@7½c. for lambs.... **Swine.**—There has been a firm market for hogs, notwithstanding the large receipts, an average of over 9,000 more than last month. The market closed irregular, and with a tendency downwards. Live hogs are quoted at 6¾@7½c., and dressed 8½@8¾c. ℔ ℔.

To be Had without Money.—There will be found upon our Premium List (see page 33) a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but a little *well directed effort*. Among these are: **Beautiful Silver-Plated Articles—Fine Table-Cutlery—Gold Pens with Silver Cases—Children's Carriages, Swings, etc.—Watches—Pianos—Melodeons—Pocket-Knives—Guns—Cultivators—Sewing, Knitting, and Washing Machines—Books, etc., etc.**—Read all of page 33, and see how easy you can obtain one or more of these good and desirable articles.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ N.B.—The New Postage Law.—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our Western Office.—Our friends in the West are reminded that we have an office at Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* are taken there, and sample copies of the paper and chromo are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

Reading the Advertisements Pays, whether one wants to buy anything or not. Every business man has his own way of setting forth his goods or wares, and studying these business announcements awakens new ideas in the mind of the reader. We have had some of our most valuable new business thoughts start up when running over advertisements on entirely different subjects....There is one satisfaction in reading the advertisements in this journal, that is afforded in few other papers, viz., that the editors and publishers aim to shut out all unreliable and deceptive persons and things, so that one may read the business pages with confidence....The advertising pages are in one sense a "Grand Bazaar," where sellers and customers may meet for mutual acquaintance, and consultation and discussion. We introduce the dealers to the readers, and whenever addressing these dealers, please let them know you formed their acquaintance in the *American Agriculturist* Bazaar.

Speak a Word for the German American Agriculturist.—For 16 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors. Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Destitution in Nebraska and Kansas.—The people in parts of Nebraska and Kansas are in terrible distress. The poorer of them, who are the newest settlers in the western parts of these States, have lost all their crops by grasshoppers, and are entirely without food or clothing, except as they receive these necessaries from abroad. Ten thousand persons in Nebraska and twenty thousand in Kansas must be provided for until spring, or they will die of cold and hunger. Money is needed to purchase food and fuel first. Donations of money may be sent by check or Post-office order, to F. W. Giles, President Topeka National Bank, Topeka, Kansas, for the account of the Kansas Central Relief Association, and will be acknowledged and receipt for the amount returned. Donations intended for Nebraska may be sent in the same manner to General Brisbin, Metropolitan Hotel, New York, or to Governor R. W. Furnas, at Lincoln, Nebraska. Packages of clothing for Kansas from New York or the vicinity should be sent to G. V. Ricksecker, Agent of the Kansas Relief Association, 317 Broadway, New York, and for Nebraska, to the Nebraska Relief Association, 11 Barclay street, New York. Farmers generally have been this year sufficiently favored to enable them to afford some relief to their unfortunate brethren in these two States. Dollar subscriptions have been started in various parts of the country, and already some have responded. We will gladly receive and forward any subscriptions, large or small, that may be entrusted to us, but the sender must indicate *which State* his contribution is for.

Enlarge the Clubs at the Same Rates.—Any club of subscribers at the club rates can be increased at the same rates per subscriber, as was paid by the original members. *Further*, a club-gatherer can run his club up so as to get reduced rates on the whole. Thus any one having sent $5.40 for four subscribers and postage, can send 16 more names for $16.60, postage included; that is, $22 in all for 20 subscribers and postage. And the same for other club rates. *Still further:* Clubs need not be confined to one post-office, if all the names are sent by the same person.

Western Poultry Shows.—The Northern Wisconsin Poultry Ass'n., will hold its 2nd Annual Exhibition, at Oshkosh, January 12 to 14. D. W. Fernandez, Sec'y, Oshkosh....The Buckeye Union Poultry Ass'n., holds its 1st show at Springfield, O., January 19 to 23d. Wm. Marot, Sec'y.

The Christian Advocate is one of the largest religious journals in our country, and will enter upon its 49th year, with a *bona fide* circulation equaled by few other religious papers in the world. It is industriously and thoroughly edited, and contains a great amount and variety of good reading. Its fine premium picture will attract an immense circle of new subscribers. The writer spelled out the words of its first number, away in a Western log-cabin, and has missed reading very few of its 2,546 weekly numbers since issued. One of its present editors was his first seminary "chum," when he left the farm to prepare for college. The terms of this journal are to be found in our advertising pages.

Terms not Advanced.—The present subscription terms of the *American Agriculturist* are the same as hitherto, or a trifle less. Formerly the price was $1.50 a year; clubs of four copies for $5; of ten copies for $12; and of twenty or more copies for $1 each—the subscribers paying 12 *cents each* postage. NOW the terms are $1.60 a year; clubs of four copies, $5.40; of ten copies, $13, and of twenty or more, $1.10 each, the Publishers *prepaying the postage.* That is, one to three copies, $1.60 each; four to nine copies, $1.35 each; ten to nineteen copies, $1.30 each; and twenty or more copies, $1.10 each, *postage prepaid by the Publishers in all cases.* Some publishers of higher priced papers announce that they will assume the postage, but in the case of the *American Agriculturist*, the price has always been down to nearly cost of printing paper, press-work, and mailing, and there was no margin of profit out of which to prepay postage.

Our Outside Enterprises—Mr. Judd is receiving applications from various parties who "wish to join a colony which he is said to be getting up to settle in Florida, Alabama, or some other Southern State." From the number of letters in relation to this it would appear that either some Mr. Judd is getting up a colony, or some other person is making an unwarranted use of the name of our senior publisher to further his schemes. We take this method to inform inquirers that our Mr. Judd is not engaged in any such undertaking. Other cases have come to our knowledge in which Mr. Judd has been falsely claimed as a member of certain corporations. Suffice it to say, that our Mr. Judd has no connection whatever with any business enterprise outside of the Orange Judd Company, and declines to sign recommendations of such, in order that the *Agriculturist* may be free of all personal interest in any matter that may come up for editorial judgment or opinion. As the Publishers require the same course on the part of those engaged in directing this journal, our readers will know that the use of the names of either the publishers or the editors in furtherance of any outside operations is entirely without authority. The place to look for editorial opinions is in the editorial columns of the paper.

Flattering, if not Fair.—"Jim," said an acquaintance to a toper, "what are you doing now?"—"I'm in the temp'rance lectur bisness."—"You lecture on temperance!"—"N-no, my brother does the lectrin, and I go with him as the 'xample and warnin'."—It is within the province of religious papers to teach and give warning, but it is only recently that we have learned that they sometimes furnished examples. A paper, which ranks itself with the religious weeklies, offers premiums, which it has a perfect right to do. It also follows and offers precisely the same things offered by the *Agriculturist*, against which we have nothing to say, but accept it as an acknowledgment of our good taste and judgment; and even when it issues a supplement as near as possible in form and style to ours, we remember the adage, "imitation is sincerest praise," and smile at it But when we find that this supplement in many cases is an exact copy of ours, the very ideas—even the very words exactly copied—we then think of the case of the "'xample and warnin'."—"Thou shalt not steal" is enforced in various eloquent forms in the paper, and the example—showing how very mean it looks—is in the supplement. This is a Union of opposites, which may be very striking, but can hardly be called Christian. If we must furnish brains for our neighbor—we must, but then what must the man who did this stealing think of his performance.

"SUNDRY HUMBUGS" has for a number of years stood at the head of an article of one or more columns, in each issue of the *American Agriculturist.* Beginning with an occasional exposure of the tricks and traps set for strangers visiting New York, its scope grew wider until it included every kind of minor fraud wherever practiced, and has become as much a regular department of the paper as any other. We hold it our duty not only to help the reader to make money, but to prevent him from being cheated out of it, if we can do so by warning him of the various swindling schemes. That we have saved the farmers and rural population of this country, not only thousands, but *millions of dollars*, there is not the least doubt, and that we have broken up the business of many a scoundrel, the suits at law, and the personal abuse and threats of those who have been exposed, bear witness. With the first number of a volume, we address a great many new readers, and we would say a few words, especially to them. Thousands will learn for the first time, that there is a paper which will not only refuse to publish advertisements of a doubtful kind, but which boldly exposes every kind of fraud under the comprehensive name of humbug. To these we would say we work for the general good, and can not use our columns as a medium to redress private griefs, nor our time to recover lost money. It is often the case that one thinks he has been defrauded by some dealer, and immediately writes to us to "expose him as a humbug." It will happen in every business that some accident or unexplained delay, may make an honest dealer appear in an unfavorable light. We have investigated so many complaints against dealers, that we are convinced that in the majority of cases the complainant is himself to blame. There is scarcely a prominent seedsman whom we have not been requested to show up as a swindler,—as money had been sent and no returns received. Upon inquiring we have found that the writer's letter lacked signature, address, or some important clue to his identity or whereabouts. An astonishing number of people omit these particulars in writing. It is only where we have proof of persistent fraudulent acts, that we can expose a person claiming to do a legitimate business. As to the other point. If any one has lost his money by sending it to any humbug scheme,

it must stay lost for all we can do to help him. The chances of getting a dollar back from one of these fellows, are much less than that of being struck by lightning. These rascals have a name for every week, and some have one for every day in the week, and as to finding them in the place where they claim to hail from, is as unlikely as the case of the needle in the hay-stack. Every dollar so sent is a dead loss, and the chances of recovering it, are not worth the three cent stamp put on the letter requesting us to do the impossible. We are always ready to help our friends when we can, but this is just one of the cases in which we can not.... We have wondered that some competent pen has never written

THE NATURAL HISTORY OF HUMBUGS.

One accustomed to classifying and grouping objects of nature, when a series of other objects comes before him, naturally groups them and subdivides them. Taking a natural history view of the subject, we look upon humbugs as a family, and to characterise the whole, as a botanist would describe a family of plants, we should say that they are marked by showy flowers of great promises, followed by fruit of bitter disappointment. They have thorns which are so hidden that they are not suspected until the wound is felt. They all grow in low and dangerous places, and if cultivated require fertilizing abundantly with dollars, but soon exhaust the soil. Everything which promises something for nothing, every scheme which promises to give a dollar's worth for less than 100 cents, every secret remedy, and most unusual ways of doing business, belong to this great family. Some of the family are repulsive at first sight, while others hide their ugly stem and bitter root, by leaves and flowers so attractive, that many good people only find out their real nature too late. In this great family there are numerous genera or kinds, as our past volumes abundantly show. Here we enumerate some of the leading ones.

THE LOTTERY AND GIFT CONCERT GENUS.

This is one of the most dangerous of all genera of humbugs, as it is the one most able to command influential names. Our position is, that lotteries of all kinds, no matter how honestly conducted, are wrong in principle, and disastrous in their effect upon the community—and to none are they so injurious as to those who draw the prizes—the "lucky" ones they are called, but it is a misnomer, for no greater misfortune can befall a man, than to make him feel that there is some way of getting money without honest work, whether of hands or brain. So we are "sot agin 'em," whether they are called Gift Concerts, Prize Distributions, or whatever name is used to mean lottery, and if all the governors of all the States, and every bishop, priest, president of bank, mayor, or alderman, should endorse such a scheme, as unfortunately some of them do, it would not make it any the less gambling, or its results any the less pernicious. Nor does the fact that the proceeds go to some Public Library, Orphan Asylum, Public School, or whatever charitable or worthy object, make the case any better. The fact that an Abbess in Russia, used the proceeds of her forgeries for religious purposes, did not, a short time ago, prevent her from going to prison. This genus of humbugs is so sugar-coated, that it deserves the bad eminence we have given it at the head of the list. Another bad genus is the regular out-growth of the lottery business, viz:

THE NOTIFICATION OF PRIZES.

Notices are sent to numerous people that their ticket, number so and so, in such a "distribution," has drawn a melodeon or other prize, worth $125, and by sending $5 or $7 to pay for packing, it will be forwarded. There are dishonest fools enough to take advantage of what they think is a mistake; they know that they had no ticket, but are willing to try to cheat, and send their money. That they lose it is small punishment. There are several minor swindles growing out of the lottery crime, but this will serve as a sample.

UNUSUAL WAYS OF SELLING GOODS,

form another genus, with several marked sub-genera. Some, including "C. O. D. Supply Companies," are so plausible, that many are bitten. Examine all these schemes carefully, and it will be seen that they require the payment of some money *in advance*, by sale of coupons, or some other dodge. They send out some goods at a low rate, as an advertisement, but when they have gathered in all the money they are likely to get, these companies suddenly *burst*. All honest dealers offer their goods at a stated price, and the purchaser may buy or not. Where there is any unusual machinery for doing a plain transaction, there is likely to be cheating somewhere. Another abundant genus is the

VARIOUS WATCH COMPANIES.

With the exception of horse-trading, there is probably more fraud in watch-trading, than in anything else. One of the phases of this is to offer a $50 or $100 watch for $4 or $5. If any one is fooled by this, and many are, it is not that the watch is a poor one, but the money being sent, no watch at all is received. Then comes a letter, asking us to go and get the watch. No—we can't do it. Simple youth, there is no watch in the transaction. The genus of

NURSERY AGENTS

flourishes especially in Western States, and in farming localities. These chaps have a book of highly-colored plates, a glib tongue, and a face of the hardest brass. Don't buy of or tolerate one of these chaps, unless he can show a recent certificate from a respectable nurseryman. Then, if you order, write to the nursery and ascertain if the person is an authorized agent. If not, don't be bluffed into taking the goods. Don't sign any agreement, or put your name to any paper whatever, that these chaps may present. If any of these fellows has a thing out of the usual way, such as a "self-pruning grape-vine," or a strawberry that grows on bushes, or any such "novelty," show him the gate, and tell him to "*git*." Better have nothing to do with the whole crew. Some are honest, but it is one grain of wheat in a whole cart-load of chaff.

BOGUS REAL ESTATE AGENTS

constitute a vile genus. There are some in New York that we expect to get "a twist" on, and are watching their little ways. If you have land to sell, and do not know an honest agent, advertise it. If any one warrants to sell your property before a given date, set him down as a humbug.....There has of late sprung up in the Southern States a vile genus of

WAR CLAIM AGENTS,

which have fleeced people who have little to lose, under the pretense that Congress has made an appropriation to compensate for losses by the war. They will present the claim, but want $5 or so for expenses. Congress has passed no such bill, and never will. The magnitude of the losses on both sides will prevent it. Not a family North or South but has lost something, and so far as any money can indemnify, it is utterly lost. The genus of

BOGUS WALL-STREET BROKERS

is not a large one, but it is pernicious enough to make up for lack of numbers. When you get a circular, offering great inducements to put money in their hands for stock gambling, consider how much you can afford to risk in this little game, and give it to your church or town charity, and put the circular in the fire. These are to be let alone with unusual severity. There is a small genus of

CHEAP SEWING MACHINES,

which we need only label as dangerous. The fraud is nearly played out. There is a genus which is small but annoying, which we characterize as

KITCHEN HUMBUGS.

This sort usually comes to the back door, and have something to accomplish the impossible. It may be a silvering liquid, or some butter-powder to make a pound of butter from a quart of milk, or it may be the chap with the non-explosive powder, which, if put into the lamp, will not only keep the oil from exploding, but the chimney from cracking!—Sensible people will need no advice in such matters. Others had better keep a big dog.

COUNTERFEIT MONEY OR "QUEER"

flourished finely a few years ago, but is now languishing from our thorough exposure. As these pretended counterfeiters, by their persuasive circulars, appeal only to those who are willing to buy and use counterfeit money, if they can do so without fear of detection, these schemes are simply propositions for copartnership in crime. No honest person will entertain them for a moment, and when we hear that a fool has sent good money to purchase counterfeits, we only say "served him right." To those curious in the "ways that are dark," we will say there is no counterfeit money at all at the bottom of these floods of circulars. The object of the senders is to get hold of somebody's money. Having this, they know their victim dare not "squeal," as he has shown his readiness to enter into the business of circulating counterfeits.... The largest and most varied of all the genera is the

MEDICAL HUMBUG.

It presents innumerable species which may be grouped in sections, which are so numerous that we can but outline one or two. To us, who are in the way of seeing so much of this, the wonder is that there can be found in the whole breadth of the country, people who will accept the absurd claims and swallow the ridiculous stories which accompany these nostrums. An experience of many years as a druggist, allows the writer (though he never advertised or promoted the sale of quack medicine) to have a fair insight into this business. He has sold the crude materials to some of the most successful quacks of their day, and has analyzed numerous of these secret remedies, and knows that all these pretended wonderful compounds, by whatever name they may be called and whatever claim they may put forth to marvellous discovery in some far-off place, are all made of the commonest drugs, and the cheapest of their kind, and the only thing remarkable about any of them is in their lying printed circulars. His experience has also shown that there is nothing about which intelligent persons know so little as their own bodies and their ailments. He has seen men, whose judgement he would trust in any matter involving law, knowledge of men and business, or in any other thing, be the victims of and advocate the most absurd and ignorant quacks. When we see the name of any otherwise respectable citizen attached as an endorsement to the most palpable nonsense, we are not surprised, but know it is one of the weaknesses of human nature. One of the shrewdest business men we ever met, and one whom it would be impossible to deceive in the ordinary affairs of life, not long ago advised us in all seriousness to carry a horse-chestnut in the pocket, to keep off rheumatism. If we were to advise him to pray to the weather-cock upon his church-steeple, he would be horrified, but it would be no more ridiculous, to our notion, than his horse-chestnut prescription....The worst set of these medical humbugs is the

PSEUDO-RELIGIOUS SECTION,

which includes all those who make use of religious professions to increase their gains. These scoundrels know that the majority of professedly religious people, being perfectly sincere themselves, give a sympathetic hearing to those who claim a religious fellowship, and the "Returned Missionaries," and "Aged Clergymen," and the "Sands-of-Life" man—a young fellow who drove fast horses and was generally fast. All have had very rich pickings. For the whole horde of these villains, who show the cloven-foot of humbug from beneath the cloak of religious hypocrisy, see our former volumes. A true man has too sacred a regard for his religious belief, ever to trade upon it....Another section is

THE MARVELLOUS REMEDIES,

those discovered in some wonderful manner, whether picked up in a bottle by the sea-shore, found among the Indians of the Andes, or the Comanches or Apaches, or some other miserable tribe of red-skins. Perhaps one of the most complete things of this class is the "Indian Blood Syrup," claimed to be sent out by Clark Johnson, M. D., Jersey City, N. J., as a discovery by Edwin Eastman during his own captivity and that of his wife among the "Salvages." We say "complete," because as to Clark Johnson, M. D., and Eddie Eastman, as Betsey Prig said, "there ain't no such pusson." The bottom of the thing is one who calls himself Dr. Huyler, whose career and the composition of whose medicines have been given in a former volume. We might go on with the endless shapes in which the genus Medical Humbug presents itself, but space forbids. The only safe way is to have nothing whatever to do with any secret remedy. There is nothing in any one of them, no matter what their claims and pretensions, that is not to be found in any well ordered drug-store; and these ignorant quacks, who parade their diamonds and fast horses, are not in possession of any medical knowledge that is hidden from any properly educated physician. To our new friends, who make our acquaintance now for the first time, we say—Avoid every secret preparation whatever, no matter by whom put up, by what eminent names endorsed, or whatever its claims. Do not write to ask if we include this or that—we make *no exception whatever*. So about doctors. If one advertises his cures, says he can cure where others have failed, if he sends out a circular of any kind, or claims to have any method of treatment unknown to others; if he warrants a cure or will refund the money, if he will consent to treat by mail without seeing the patient—in short, if he advertises anything beyond the fact that he is a physician, and gives particular attention to a certain class of diseases, set him down as a *quack*, and not to be trusted. Do not write to ask if we include this or that one in this opinion—*we make no exception*. Moreover, do not ask about any New York "doctor," who sends out circulars. Our acquaintance does not lie in that direction, and we can give no advice about them except on general principles, to *avoid the whole crew*....These are a few of the forms assumed by the monster we have been fighting for many years, and which we shall keep on fighting so long as one of its foul heads has life in it.... This general view of the family, though a partial one, has taken so much space that we have no room to cite species, or individual cases. Of these there are unfortunately too many, as will appear in our future issues..... We can do our new friends no better service than to advise them, as we have often advised our old ones, to shun every doubtful project, no matter how flattering the promises by which it is accompanied.

See Page 33.

Death of the Hon. Ezra Cornell.—The crowded state of our columns prevents more than a mere announcement of the death, at Ithaca, N. Y., Dec. 9th, last, of the founder of Cornell University.

"The Witness" is the first successful effort to establish a daily and weekly Christian journal of a pure character, free from vitiating reading or advertisements, yet giving the general news at a price to bring it within the reach of the masses. It will be welcomed by all good men. For terms, etc., see advertisement.

Boldu.—The sheep in Chili have discovered a new medicine. Some sheep suffering from liver-complaint—whether in consequence of high living, is not stated—were shut up in a corral, which was repaired with fresh twigs of Boldu, (*Boldoa fragrans*); on nibbling the shoots, the sheep quickly recovered, whereupon the French chemists proceeded to extract a new alkaloid from the leaves of this tree, which they expect sheep without wool to swallow.

The Edinburgh Botanic Garden, one of the oldest and best in Great Britain, was at the beginning, "forty feet square." After many removals and enlargments, it has covered 27 acres. There is now an effort to obtain 20 acres more, for an *Arboretum*, which will be small enough at that.

Kitchen Gardening in New England.—Under this title an Englishman, who has been a short time in Boston, writes to the "Gardener's Chronicle," (London) an amusing account of our gardening. A correspondent, also near Boston, takes exception to some of his statements: "Corn-salad is said by this writer, to be 'found in most large gardens.'—Is this so? I am not aware of its being raised at all in New England. 'Endive,' he adds, 'is here almost a stranger,'—more's the pity; but endive is met with in the Boston markets, never corn-salad, to our knowledge. Okra is declared to be 'in my estimation, a useless poor man's vegetable.' But '*useless* poor men,' are so scarce 'down East,' that there must be small demand for the article."

Bommer's Manure.—"X. Y. Z.," Waukegan, Ill. We have frequently stated, and cheerfully do so once more, that any one is at liberty to use the methods detailed in Bommer's book. The patent, if it ever had any validity, expired long ago.

An Exhibition in the Island of Java.—An Agricultural and Industrial Exhibition will be held at Diocjakarta, Java, Dutch E. Indies, in April 1875. We regret that the notice of this fair did not reach us earlier. The Dutch possessions in the East Indies, have a population of some 30 millions, and they are desirous of opening relations with this country, and of becoming acquainted with our labor-saving implements and machinery. We fear that it is now too late to forward articles. The agent in this country, is L. W. Morris, (Morris' European Express,) 50 Broadway.

The Planet Junior.—This combined Seed Drill and Wheel Hoe, made by S. L. Allen & Co., Philadelphia, received a silver medal at the recent great Fair of the Franklin Institute. Only one other silver medal was awarded for agricultural implements.

Shorthorn Convention.—The Annual Convention of Shorthorn breeders was held at Springfield, Ill., on the 3d Dec. last. The following officers were elected for the next two years: President, J. H. Pickerell, Ill.; Vice Pres., S. W. Marfield, Ky., and David Christie, Canada; Sec., S. F. Lockridge, Ind.; Treas., Claune Matthews, Ind. Directors—Gen. L. Desha, Ky.; T. C. Jones, O.; M. Miles, Mich.; J. R. Page, N. Y.; Stephen White, Ontario; M. H. Cochran, Quebec; Clint. Babbit, Wis.; A. J. Dunlap, Ill.; George Sprague, Iowa; J. H. Kissenger, Mo.; Harvey Craver, Ind.; Cyrus Jones, Cal.; D. W. Crane, Kan., and M. S. Cockrell, Tenn. A committee, J. H. Pickerell, Ill., Chairman, will collect statistics of Shorthorns in the U. S. A committee, with M. Duncan, Ill., Chairman, is to draft an address to the breeders of the U. S., urging the importance of this association, and thus, if possible, to induce them to become members.

See Page 33.

Please Notice!—In sending roots, fruits, plants, or whatever specimens to us by mail, the parcel must not be pasted or sealed in any manner, but so tied that it can be opened by the postal authorities for inspection. If the wrapper is pasted or the string sealed, we are charged *letter* postage. As 99 in 100 of these parcels are entirely for the benefit of the sender, who wishes some information concerning their contents, it is not quite the thing that we should pay for the privilege of giving it. This happens often, but we are quite sure it is because our friends are not aware of the rules of the Post-Office. Also.—In sending by express, please pay the express charges. Our payments on parcels that are of not the least value to us, amount to an important item during the year. It is a tax to which we should not be subjected. If one has a fruit or other product that he wishes us to see, unless he is willing to place it in our hands free of cost to us, we prefer that he should not send it. Not long ago we paid seventy-five cents for a little box of grapes, which, like nine-tenths of the grapes sent us every year, were of no possible use, not fit for any mortal to eat. For that sum we could buy six to ten pounds of the best grapes in the market. We are very willing to examine specimens, and glad if we can serve our friends by doing so, but it is no more than fair that we should insist that we should not be put to an expense in the matter.

The Bulletin of the Bussey Institution.—The third part of this valuable series of agricultural contributions has come to hand, and like its predecessors, shows that a great amount of thorough work has been done. This Department of Harvard University, promises to do more for scientific agriculture than any other public institution in the country. The notable feature in the present bulletin is a paper by Prof. F. H. Storer, "On the Average Amounts of Potash and Phosphoric Acid contained in the Wood-ashes from Household Fires." This is accompanied by a very full table showing what has been done by other chemists in this direction, which is of great value.

North-Western Spring Wheat.—The shipments of spring wheat from Minnesota are now amounting to 250 car loads of 400 bushels, or 100,000 bushels daily, over the Chicago and North-Western Railway. The quality of the wheat raised in the portion of the State opened up by this road is very superior, so much so that an especial grade has been established for it in the Chicago market, known as North-Western Spring Wheat. This grade of wheat is now selling at 95 cents a bushel for No. 1, while ordinary No. 1 spring wheat sells for 91½ cents.

Wasted Half-Hours.—Estes and Lauriat publish "Half-hour Recreations in Popular Science." No doubt the Half-hours with Insects, which they announce, may be profitably spent, in Prof. Packard's company. But more recreation than instruction is to be got from another of the series, if an extract now going the rounds of the journals is a fair specimen. It is about Actinism, which is defined to be "the chemical power which is necessary to excite germination in plants." It is said to "*emanate* from the blue ray of the spectrum." Also that seeds will not germinate at all under yellow light, while under the blue rays tropical seeds, which have otherwise lost the power of germination, come up freely. The same is said of mummy-wheat nearly 3000 years old. There is no limit to the vitality of this mummy-wheat story; that is sure to come up, over and over, although the grain won't. Best of all, this recreative writer tells us that if the seeds in the coal-measures [this term reveals English authorship] had not unfortunately got overheated, they would come up too, and we might raise "palm-groves" from them. Oh! science, what atrocities are perpetrated in thy name!

☞ **Don't fail to Read what is said about "Do Good and Make Money," in January, on page 33.**

Who Write for the Agriculturist?

There are two very different methods of conducting a paper, the one to let each article stand upon its own merits, without reference to its authorship, and the other to have, as the law in France requires, all articles signed by the writers. Each of these plans has its advantages, and much is to be said for and against both. We have pursued an intermediate course, giving the name when the writer preferred it should be published, and withholding it in other cases. Many persons like to know who provides for their instruction and amusement, and at the beginning of the new volume we give them a list of those who will cater for them regularly through the year. The Publishers have always gone upon the principle of making the best possible paper, so far as outlay would do it, and though the office force is sufficiently adequate to filling the space every month, they prefer to bring in the varied experience and teachings of a number of others, residing in various parts of the country. So, in addition to a strong editorial force at the office, the following are regular contributors, the majority of whom write *exclusively* for the *Agriculturist*. To avoid giving undue precedence to either, they are enumerated alphabetically.

Prof. W. O. Atwater, of Wesleyan University, where he has charge of the department of Agricultural Chemistry. His first contribution appears in this issue, and he will hereafter look to questions on fertilizers, and other chemical points, a task for which his education in the best German laboratories eminently qualifies him.

"Aunt Sue" will, as heretofore, take charge of the puzzles. As to who she is, she prefers to leave a "puzzle."

P. J. Berckmans, of Augusta, Ga,, has occasionally contributed, and will now do so frequently. He is not only the most competent horticulturist in the Southern States, but one of the first in the whole country.

Rev. Wm. Clift, of Connecticut, who has been with us for many years, will continue. He is a thorough farmer, and knows all that is worth knowing about fish-culture, to which he has given much attention.

"The Doctor" will, as in former years, have his "Talks" with the children, and as he usually selects some scientific topic, the little folks are sure to be instructed as well as amused.

Faith Rochester, a housekeeper in a far Western State, finds time from her household cares, to express her sensible views, and give her practical hints in clear, vigorous language, to help her sister housekeepers.

Prof. Asa Gray, of Harvard University, who has in other years contributed occasional articles, will now write exclusively for us, with and without his signature. It is not necessary to state to any intelligent person, that Prof. Gray is not only among the leading scientific men of America, but of the world.

Joseph Harris, whose "Walks and Talks on the Farm" have become such an important feature of the paper, will continue to Walk and Talk—and of course "The Deacon" will have his word to say also.

Peter Henderson, is known from one end of the country to the other, as the successful market gardener, and the great commercial florist; he will continue to instruct the people and disgust the old fogy gardeners, by telling the secrets of the trade.

"The Pines." The contributor who writes "Notes from the Pines," is purely an amateur cultivator, and his articles are intended for those, who, like himself, grow fruits, flowers, and vegetables for the love of it.

M. Quinby, stands at the head of the apiarian fraternity, and is one of the few writers on bees, who have no axe to grind in the shape of a patent hive; he will this year interpret the "Voices," to which he has so long been a listener.

J. B. Root, a successful market farmer and seed grower, at Rockford, Ill., will give articles embodying his experience, and showing labor-saving expedients and management peculiar to the West.

Col. Geo. E. Waring, Jr., gives other articles besides the "Ogden Farm Papers," to which his name is attached. His articles have created a wide interest, and have done much to stimulate others.

These are regular contributors, besides which there are those, in all parts of the country, and in Europe, who favor us with articles. As to our engravings, they speak for themselves. Now that we are indulging in a little personal talk, we may notice a fling in which some papers are now and then pleased to indulge. Finding no fault in the teachings of the *Agriculturist*, they speak of it as a "city agricultural paper," and its editors as "sidewalk farmers." Papers are published where there are the greatest facilities for procuring paper, printers, engravers, and all the mechanical helps, as well as the most complete mail facilities. It does not make the Western farmer's wheat, pork, apples, or poultry, any less agricultural products, because they are *sold* in New York, and we can not see that the writings of practical men, are any the less practical because they are put in type and printed in New York. In our whole corps of editors and contributors, there is but just one who is not engaged on the farm, in the garden, greenhouse, laboratory, household, or wherever his or her field of labor may be, and this one is only temporarily away from his farm, on account of the health of his family. If these gentlemen will criticise our articles, we may learn something from them, but these "shrieks of locality" seem very small. The Editor.

To Prepare Bacon.—"C. V. W.," Nashville, Tenn. To prepare side bacon, divide the carcass down the backbone, remove the head, hams, and shoulders. Cut out all the ribs with as little meat upon them as possible. Then rub the flesh side of the meat with salt, or whatever mixture is chosen for the pickling. One pound of salt, 4 ounces of coarse brown sugar, and half an ounce of saltpetre, is a favorite pickle. As each side is well rubbed, it is placed upon a stone or oak slab, in a cool cellar, with the skin downwards; and one side is laid upon the other in a compact pile. A board is laid upon the top, with heavy weights. In a week the sides are rubbed afresh with salt or the above mixture, and the top one becomes the bottom one of the pile. This is repeated for six weeks, when the meat will be sufficiently salted, and may be hung up to dry, or taken to the smoke house. Ten days smoking is sufficient.

GOOD THINGS VERY CHEAP.—We again remind our friends, (and by friends we mean *all* our Readers,) that there are in our Premium-List (referred to on page 32) many good things, things really useful and desirable, which they can *all* get at very little expense, if any. We have large plans for making this journal *very good* and *very valuable* to *everybody* during the coming year, and we shall surely put *many* items of information into the *Agriculturist*, that will *each* be worth far more than the small subscription price. Now it will not be much labor to talk this to others, and get a few at least to subscribe. For every list of names sent us, large or small, we offer good premium articles of various kinds. The Publishers having extraordinary opportunities to get these premium articles, can afford to give them as they propose, and take pleasure in seeing them distributed. *Our* friends know that we never mean to send out any articles but those that are good and every way reliable, and as represented. Please look over the list of Premiums, and each one favor himself, and us, by securing one or more of them.

Agricultural Colleges do not stand very high in the esteem of the *Western Rural*. That very outspoken paper, in speaking of the lack of positive knowledge on the utility of giving salt to animals, pays its attention to the colleges in this manner: "What we want is accurate knowledge in this direction. If our miscalled agricultural colleges, when they *do* make experiments, would try something useful, instead of testing the lifting power of a growing squash when the sides are cramped in a box; or instead of 'proving' that cattle winter better without than with shelter; or in lieu of demonstrating that wild cattle do not become reconciled to being stalled for three months, while with ordinary stock-feeders, five or six days are enough, then these asylums for classical idiots and political professors would stave off the impending day of reckoning between them and the people whose trust they have so outrageously abused. Pending the contemplated 'grab,' by these institutions, of the balance of the public lands, they would be doing wisely if they would find out something of practical benefit to the art they were appointed to foster."

Good News from Florida.—The Florida fruit-growers have had a Convention at Palatka, and more than that, they have formed the Florida Fruit-Growers Association, which is now a regularly organized body; its president is P. P. Bishop, of San Mateo, and the Corresponding Secretary, C. Codrington, of Jacksonville. Most of the prominent fruit-growers in the State are members, including our friend, Col. Hardee, and when he is present the meeting cannot be dull. Some very interesting addresses were made upon practical subjects, and altogether the Florida fruit-growers are fairly upon the right track.

The Ohio State Horticultural Society held its last annual meeting at Akron, December 9-11. An attractive programme was offered, and we should have been glad to announce the meeting had we received notice in time, but with that moderation which characterizes societies of this kind, its announcement came to us about a week after our December number went to press. While we are willing and desirous to give notice of all such gatherings, it is rare that we are able to do so, the Secretaries, or those whose business it is, seem to care much less about the matter than we do.

Barren Strawberries.—"R. M.," Philadelphia. You do not say how old your plants are. The Wilson requires more frequent renewal than some others.

Vignes Americaines, Par P. J. Berckmans. Such is the present interest in American grape-vines in France, that everything in relation to them is eagerly watched there. Our friend, Mr. Berckmans, sent a correspondent abroad a list of our varieties, classified according to their origin, and was quite surprised to find it issued in a pamphlet form. Though not intended for publication, Mr. B. has no reason to regret its appearance, as it is a useful list of American grapes.

Chess and Wheat.—"J. W.," Center County, Pa., sends us a bit of soil containing young wheat plants, and proposes to show that this wheat will turn to chess. The Philadelphia Academy of Natural Sciences is just now the headquarters of *Bromus* and *Hordeum* science, and the New York Weekly *Tribune* its organ. So far as we are concerned, we are ready to examine any specimens that claim to be part wheat and part chess, and will pay a handsome sum for the first specimen which proves to be a genuine mixture, or shows that a wheat plant produces chess, or vice-versa.

Sumach.—"C. B. H.," Hobart, (No State.) Wild Sumach is gathered, (it would not pay to cultivate it,) dried in the sun and sold to the sumach mills. Unless you are near a mill or tannery it will be difficult to sell it.

Tiles and Brick.—"H. B. S.," Rockport, O. The red color of bricks and tiles when burned is due to the conversion of the oxide of iron which is black, and gives the gray color to the clay, into the peroxide of iron, which is red. Some clays have but little iron, and do not burn red; the well-known Milwaukie bricks are this kind. Fire bricks are made of the purest kind of clay, usually found in coal formations, which is free from every other ingredient except silica and alumina.

How to Feed Parrots.—"L. T.," Baltimore, Md., gives his method as follows: "Parrots, being tropical birds, tropical fruits and nuts are their favorite diet; foremost among these ranks the banana. I would say give your parrot bananas, pineapples, oranges, apples, pears, grapes, blackberries, huckleberries, English walnuts, shellbarks, chestnuts, or peanuts. You can give them biscuits made without soda, and they will live on plain bread and water, or the time-honored cracker, but if you want them in good health and plumage, give a mixed diet such as I have stated. Give no animal fat; you may occasionally let them have a little raw beef, but it must be lean. Follow the above, and the bird will live nearly, if not quite one hundred years, and can be taught to talk plainly provided it is an African gray parrot, as these learn much easier than the common green ones. We have a bird for which $100 has been offered several times; don't think $150 would buy it."

Bed Covering.—An unusually cold snap reminds us of the often published fact, that newspapers placed between the ordinary bed comfort, are greatly conducive to warmth—useful to the poor, and the rich need not despise it. They can use U. S. bonds.

Report of the Department of Agriculture, for 1873.—With so industrious a gentleman as Mr. Dodge for editor, the Report of the Department can not fail to have some value. The one recently issued, appears to be more confined to its proper sphere than previous volumes, and there is a notable absence of the job writing and axe grinding of some former reports. The entomologist and chemist make brief reports, and the "microscopist" presents more of those figures which are a wonder to the unscientific, and the laughing stock of mycologists at home and abroad.

New York Dairymen's Association.—The annual meeting of the N. Y. State Dairymen's Association met at Binghamton, N. Y., on Dec. 9th and 10th. The meetings were largely attended, and many valuable papers were read, and interesting discussions were held upon the subjects treated. The various methods of making butter and cheese, and of marketing these products, were the chief subjects of discussion. The manufacture of skim-milk cheese was denounced as dishonest and injurious, and a committee appointed to report on the practicability of an experimental farm and station for chemical investigations.

Letters we can not Answer.—We receive many letters of the tenor of the following, which, being brief and to the point, is given as a sample of the unanswerable: "I know where I can buy a good farm for five thousand dollars; my son-in-law and myself have about two thousand dollars. We can buy it by paying one thousand dollars down. We know something about farming, but not much; we are both married, and all strong and healthy. Do you think it advisable or not? Please answer in the next *Agriculturist*."—On general principles we should answer "No." If the writer has not fully made up his mind that he knows how to carry on a farm, or if he does not know how, is determined to learn in spite of all obstacles, but goes to a perfect stranger, who never saw him, and knows nothing about him, his habits, intelligence, tact, perseverance—in short, his character, it would be our duty to say that he had better not undertake farming. On the other hand, did we give this advice, and it were followed, it might be the means of diverting a man from the occupation for which of all others he was best fitted. We do not wish to assume the responsibility of giving advice in matters of this kind. It is impossible for any one to do justice in such a case. If we were to ask the writer of this letter if we had better raise a calf or kill it, he would decline to answer, unless he knew something about the calf. Advice of the kind asked in this letter is perfectly worthless, unless the one who gives it has a thorough knowledge of the man, his antecedents, and how he manages his present business; if he is unthrifty now, he is likely to be much more so on a farm. It is one of the peculiarities of human nature that it makes up its mind, and then asks advice. If the advice of a stranger will affect his decision in any way, this man is not likely to succeed as a farmer—for the next stranger may advise him to do some absurd thing with his farm. Of all men, the farmer needs to be self-reliant, and while he is ever ready to learn, he should be able to decide for himself. While some persons would live comfortably upon a desert island, others would be poor at the end of 10 years, if they had the best stocked farm in the country given to them free, and we must decline giving advice in all such cases.

Centennial Games of American History and Biography.—Mr. Treat, the publisher, has admirably succeeded in devising a series of cards, constituting the "Centennial Game," that combine interest and instruction. No one can play them well, without becoming expert in American history. The games will be exceedingly attractive for amusement in the family circle these long winter evenings.

A New Species of Coffee.—The Colony of Liberia, of which little has been heard of late, is coming forward with a new staple product, *Coffea Liberica*, a new species of coffee. They are introducing it into Ceylon, to take the place of the old species, which is sadly afflicted with various diseases and pests, so that it hardly pays any longer. The new species is said to be quite as good and prolific, and more hardy; but the principal advantage is that it is free from all the maladies that the Arabian species is heir to.

Charlock.—"C. J. L.," Maford. There are two distinct plants known as Charlock: the wild mustard, *Brassica* (or *Sinapis*) *arvensis*, with a pod which splits open like the cabbage pod, and the wild radish, *Raphanus Raphanistrum*, which has a pod with divisions between the seeds, and, like the cultivated radish pod, does not split. The last named is the one more generally called Charlock in England. The seeds of both are remarkably tenacious of life, and it is a question if their vitality will be destroyed in the manure heap. No weed seeds should ever go into the manure if it can be avoided. If a field is badly infested with this, it is better to summer-fallow it, or use it for a sheep pasture; sheep will thrive on either kind of Charlock. The necessity of preventing weeds from seeding can not be too often repeated.

Diseases of Horses and Cattle.—Two of the best works upon the subjects of which they respectively treat, will hereafter be issued by the Orange Judd Company, to wit: The American Reformed Horse Book, and the American Cattle Doctor, both by Prof. Geo. H. Dadd, whose reputation is such as to need no special notice. The books are handsomely bound, gilt backs, in size, octavo. See advertising columns.

Large Purchase of Shorthorns.—Fourteen head of choice Shorthorn cattle, six of them of the popular Duchess tribe, and eight of other popular families, have recently been purchased by Messrs. Cochrane and Beattie, of Canada, from the herd of Mr. George Murray, of Racine, Wis. The price has not been made public, but is probably over $100,000. The six Duchesses of Slawsondale which are included in this purchase could have been sold for $15,000 each not long ago, but the offer was then refused. This sale is of peculiar significance, as Mr. Cochrane is the leader amongst the "Booth" breeders, and these cattle he has now purchased are of the best of the "Bates" stock.

The Medical Record.—Physicians will be glad to learn that the Medical Record will, with the first of the year, be published as a weekly. The well known publishers of medical books, William Wood & Co., 27 Great Jones St., N. Y., will continue to be the publishers of the Record.

Catalogues Received.

ROOT'S GARDEN MANUAL AND SEED CATALOGUE: This is by our contributor, J. B. Root, Rockford, Ill., and besides being a price-list, it contains much useful information on gardening.

BUIST'S ALMANAC AND GARDEN MANUAL, by Robt. Buist, Jr., Philadelphia: An illustrated catalogue of vegetable seeds, with full directions as to their culture.

Not the least useful is a monthly calendar, especially for the Southern States. Also a wholesale price list.

SEED CATALOGUE OF GEORGE. S. HASKELL & Co., Rockford, Ill. A well illustrated, very full, and remarkably neat business document.

MILLER & SIEVERS, San Francisco, Cal., send their list of California tree, shrub, and flower seeds, with others from Australia and Chili.

CHARLES HUBER & Co., Hyères, France, send an enormous catalogue of seeds of all kinds, including many novelties offered for the first time.

THE BELLEVUE NURSERY Co., Paterson N. J. Henry E. Chitty, Sup't., send us the first catalogue of florists' plants for 1875, that has yet come to hand. This establishment always manages to have some choice novelties, and that it sends out well grown plants, we can testify of our own knowledge.

BIRD BROS., KEARNEY NURSERY, P. O. address, Newark, N. J., offer a well considered selection of fruit trees, and shade, and ornamental trees, including evergreens.

MALLINCKRODT'S NURSERY CATALOGUE., C. T. Mallinckrodt, St. Charles, Mo. This is quite as much a treatise on fruits and fruit culture, as it is a catalogue. A selection of the better varieties of each fruit is given, with full descriptions and general directions for their management—A model catalogue.

R. S. JOHNSTON, Georgetown, Del., sends his price-list of peach and other fruit trees at low rates.

See Page 33.

"Walks and Talks" Correspondence.

FATTENING PIGS.—"I have 40 pigs, about 8 months' old, and weighing about 100 lbs. each. I can get 5 cents per lb. for them now. Corn is worth 80 cts. per bushel. Had I better sell the corn and the pigs, or fatten them?" I suppose it will take 10 bushels of new corn, fed in the ear, to make those pigs weigh 200 lbs. each. If the pigs are worth no more per lb. when fat than they are now, it will not pay to feed out the corn. If the pigs should be worth 6¼ cts. per lb., the account would stand even. If 7 cts., which is not improbable, the pigs would then be worth $14 each, and you would get 80 cts. a bushel for the corn, and $40 and the manure for the trouble of feeding. You ought to have good grade pigs, and feed them liberally, and have them weigh 200 lbs. each now. They would be much better worth 7 cts. a pound than thin "grassers" are worth 5 cts. Three or four bushels of corn each, in addition to what they have had, would have paid better than 10 bushels will now. As matters now stand, I should winter them over as store hogs, and fatten them early next fall, when pork is likely to be higher.

SHIPPING APPLES TO ENGLAND.—The charges from New York to Bristol, by the Great Western Steamship Line, are "five shillings sterling and five per cent" per barrel. The freight need not be prepaid. The freight to New York and cartage to steamer at pier 18, E. R., must be prepaid. You are probably correct in thinking Bristol a better point to ship apples to than Liverpool. But I have had no experience. You should be very careful to select the best winter apples, free from specks, and well grown. Give this matter your personal attention. Shake the barrel well as each basketful is put in, and when full press down very firmly, and head the barrel carefully. Put your name and address on the barrels and consign them to your friend as you propose. The advantage you have over the dealers lies in your ability to select the best fruit from your orchard, and to pack it carefully. Too many of our farmers injure themselves and the dealers by shipping poorly assorted fruit. The freight from your farm to Bristol will be more than the fruit is now worth at your farm, and it will not pay to send poor apples.

"WHICH IS THE BEST HORSE RAKE"?—I cannot tell you. I have used several, and they are all good. The Ithaca is a very good and popular rake. It is worked by hand and by the foot. For raking stubbles, I would just as soon have it as one of the "self-delivering rakes." But I frequently use my rake for turning clover—lifting it up every five or six feet. In this case we want the work of lifting the rake to be done by the horse. I have used such a rake for eight years. I have forgotten whose patent it was. It has done me good service, and I would speak of it with respect, though I have now discarded it, and got a new Wisner rake, made in Ohio. I bought it from an agent, and forget the name of the manufacturer. It is a capital rake. At the N. Y. State Fair I saw a Wisner rake, made by the Glen & Hall Manufacturing Co., of Rochester, N. Y., which appears to be a decided improvement. The "self-delivery" apparatus is on an entirely new principle. It is well worthy of examination.

MANGEL-WURZEL AND POTATOES IN ILLINOIS.—D. B., of Champaign, Ill., writes, (Oct. 12,) "As you are doubtless aware, our season has been remarkably dry, and nearly all crops are very light. Lane's Imperial Sugar Beet is about the only thing that has done well with me. I planted a bushel of Extra Early Vermont potatoes, seed from Bliss, on a quarter of an acre, gave it the most approved culture; used ashes, hen-manure, plaster, etc., as directed by the experts, kept the land very clean, and got 16 bushels from the patch. Shall not compete for the premium."

It would seem that the rich soils of the West should be highly favorable for the production of mangel-wurzel. I have supposed that on ordinary farms at the West, this crop could not compete with corn in producing food for fattening cattle and hogs. In Champaign, Ill., the corn is a failure this year. The mangels are a good crop. Now if this should prove to be a general rule; if a poor corn year is a good mangel year, then it would certainly be wise for the farmers to sow a few acres of mangels every year. The mangels cannot compete with corn at 25 cts. a bushel. But in a season like this, when corn is a comparative failure, and is worth from 60 to 75 cts. a bushel on the farms of the West, a few acres of mangel-wurzel would prove very advantageous to the breeder and feeder of good stock. It is not well to have all our eggs in one basket.

In regard to potatoes. I suppose an extra early variety rarely gives a large yield. I live in a great potato growing section. Many of our farmers have made themselves rich in growing potatoes. But I think it is rare that we get more than 16 bushels of potatoes from 1 bushel of seed. It is true that 16 bushels from a quarter acre is a poor yield—but where a large yield *per acre* is desired, we should, especially with an early variety, use three or four times as much seed as my correspondent did. In a dry season, the ashes and hen-manure, especially if used with the seed, may have done more harm than good.

On the 28th of June, we planted half a peck of Extra Early Vermont. Dug them Oct. 5th; produce 13 pecks—or 26 from 1 of seed. No manure was used, and nothing done to get a large yield except to keep the land clean.

On the same day we planted 1 lb., (or 3 potatoes), Compton's Surprise. Dug Oct. 14th—produce 34 lbs.

One lb., (3 potatoes), of Snowflake, planted same day, and dug Sept. 29th, produced 29 lbs.

One lb., (3 potatoes), Brownell's Beauty, planted same day, and dug Oct. 14th, produced 51 lbs. All the men on the farm, and there are several "old fogies" among us, regard Brownell's Beauty with great favor. The potatoes were of a good uniform size. It bids fair to prove a valuable variety for this section.

MALT-COMBS FOR PIGS AND SHEEP.—A correspondent writes that he can get malt-combs for 12½ cts. per bushel, and asks if they are worth it as food for stock. For food *and* manure they are well worth what you are asked. They make very rich manure. I buy all I can get at 15 cts. per bushel of 40 quarts. They weigh from 20 to 25 lbs. per bushel. I feed them to sheep and pigs. For fattening pigs, we mix 2 bushels of corn-meal and 5 bushels of malt-combs, with 80 gallons of water, and cook it thoroughly. We cook with a steamer; allowing for the condensed steam, I calculate that the cooked feed contains about 75 per cent of water. The pigs eat it readily, and seem to thrive remarkably well on it. I should say, however, that after the fattening pigs have eaten all they will of this cooked feed, we give them, after each meal, two or three ears of corn each, or about half a pint each of dry peas. The object is to get them to eat all they can digest. I calculate that the manure is worth all that I pay for the combs. We feed them dry to the sheep—say 1 lb. to each sheep per day. At first the sheep do not eat them readily, but soon learn to like them.

"What are Malt-Combs?"

In answer to this question "Walks and Talks on the Farm" writes as follows: In malting barley, the barley is soaked in water for two or three days, until it has absorbed about half its weight of water. It is then placed in a "couch" about a foot thick, and kept at a temperature of about 60°. Here the barley grows or germinates. Much heat is evolved by this process from the conversion of the carbon of the starch into carbonic acid, and it is necessary to turn the growing barley frequently and spread it out in thinner layers. When the barley has grown sufficiently, it is thrown on wire screens and dried by artificial heat. These screens allow a portion of the shoots to fall through. These shoots are mixed with more or less ashes from the kiln, and are not considered fit for food. The Rochester Malt House recently gave me about five hundred bushels on condition that I would be at the expense of removal.

The malt-combs proper are obtained from the brewers, or from those who grind the malt. Before grinding, the malt is run through the screen, which removes all the shoots, roots, and dust. It is this refuse, removed by the screen, that goes by the various names of malt-combs, malt-dust, or malt-roots. It is sold in Rochester for 12½ to 15 cents per bushel of 40 quarts. The milk-men who buy the "grains" usually take the malt-dust also. In fact, many of the brewers mix them together and sell them at the same price. I think the malt-combs are worth more than the grains. At any rate they have one advantage, they are dry, and can be kept any length of time, while it is necessary to feed the grains out immediately, or they sour. Lawes & Gilbert, in their experiments on feeding sheep with barley and malt, found that:

Dry barley contained	1.78	per cent of nitrogen.
" malt "	1.70	" " "
Malt-dust and kiln dust "	4.38	" " "

During the process of germination, a portion of the nitrogen is removed from the barley, and is found in the malt-dust. I was with Lawes & Gilbert when these experiments were made. It was found that the sheep gained faster on the barley than on the same amount of malt which the barley would make. A well-known Norfolk farmer and Member of Parliament visited Rothamstead while the experiments were going on. It so happened that a few days before he came, the barley, malt, and malt-dust, had been analyzed, with the results given above. It was found that the malt-dust was exceedingly rich in nitrogen. In fact, 38 lbs. of the refuse malt-dust contained nearly as much as 100 lbs. of malt. We weighed the sheep every week, and there was no mistaking the fact that the sheep having the barley gained faster than those having the malt. After studying the figures for some time, the Norfolk farmer and Member of Parliament, who was an earnest advocate for the repeal of the malt-tax, on the ground that farmers wanted to use malt for feeding their stock, exclaimed, "I do not understand this. I have used malt-dust for sheep and find it capital. And if malt-*dust* is so good, what must the malt itself be." After he was gone, Dr. Gilbert quietly remarked, "that kind of logic may do for the House of Commons, but will not pass at Rothamstead." I have told the story before, but may perhaps be allowed to repeat it in connection with this question of the value of malt-combs. In conclusion, I may say that if any readers of the *American Agriculturist* live near a brewery, where they can get malt-dust at from 10 to 15 cents per bushel, they can feed them to cows, sheep, or pigs, with advantage. They are by no means as valuable *for food* as corn-meal, but make exceedingly rich manure.

Botanical Instruction at Harvard.

It is not many years ago that a young man, who would be a chemist, felt that he could only find the proper schooling abroad, but all that is bravely changed. Harvard, Yale, the Wesleyan, and other Colleges, offer the most thorough chemical instruction in their schools of science. The same may be said of zoölogy and some other natural sciences, for which ample laboratories and museums are provided. It is only recently that Botany has been placed on a par with its sister sciences in respect to educational facilities, and though the leading colleges have had a single professor, there has been nothing corresponding to the School of Botany now in operation at Harvard. It has been our pleasure to make occasional visits to Cambridge, and note the gradual growth of this department. At the meetings of the American Association (there is more to the name), and those of the British Association, botany formerly stood in the background, and a paper was now and then tolerated; but botany has, within a few years, come to the front. The president of the American Association two years ago was Prof. Asa Gray, a botanist, whose address, upon purely botanical matters, has been read by the whole world of science, and only a few years ago Dr. J. Hooker was president of the British Association, as he is now of the Royal Society. We may trace this change to the fact that the first botanists have written most popular works, and by their aid intelligent people now look upon botany not as a mere study of stamens and pistils, and giving of hard names to plants, but as a science which regards every phenomenon of plant-life and every relation of plants to the earth, the air, and to animals, including man. Taking this view of botany, it is not to be wondered at that it has risen in public estimation, and that instead of being dismissed with, "it is a beautiful study for ladies"—a doubtful compliment to both ladies and the science—it has come to be thought worthy of the serious attention of our educators, and Harvard has provided ample facilities for all who would study botany as an essential part of a liberal education, or take up some department of it as a special pursuit. The botanical department of Harvard is of course at the Botanic Garden; and the writer can contrast the single combined dwelling house and study, the swampy, rubbishy garden and dilapidated greenhouse of 20 years ago, with the handsome range of botanical buildings, conservatories, and well arranged garden, of the present. With the advantages here offered, there is no need that the botanical student go abroad, for at the head of the whole is Professor Asa Gray, not

only the very first of American botanists, but if we enumerate the five leading botanists of the world, his name must be included. He remains as Director, and the magnificent herbarium which he founded, and his unequalled library, are accessible to students. While Prof. Gray has transferred a portion of his duties to others, he still remains as supervisor and "court of last appeal." Botanists everywhere will be glad to know that he is devoting himself to the "*Flora of North America*," and will join in our wish that he may be spared to complete this much needed work, one which no one else is so well able to undertake. His labors on this are much interrupted by correspondents in all parts of the country, who send him plants to name, and his time is much frittered away in doing that which any one fit to edit an agricultural or horticultural paper should be able to do—and we know that he would be very glad to be relieved of much of this. Plants from the higher Rocky Mountains, Arizona, Alaska, and such out of the way places, he would be glad to see, but do not trouble him with near-at-home specimens. We may add that a postal-card enclosed for an answer is no small saving of time. Every man of science is annoyed by *descriptions* of wonderful things in his department. A poor specimen is better than the best description; such things only take up time and are only after all conundrums to be given up. We volunteer this in behalf of Prof. Gray, knowing how much his time is taken up by inconsiderate people, who might as well get their information elsewhere.

Prof. Sereno Watson, formerly botanist to Clarence King's Expedition, is now the curator of the herbarium, and attends to its accessions, and looks after the wants of those who consult it. Besides this he is doing much valuable work, not the least of which is an index to the scattered materials of North American Botany.

Prof. Goodale takes the work of general instruction in botany. The classes, which now number 50 or 60, meet in the new lecture room and laboratory; this building communicates on the one side with the herbarium and library, and on the other, with the conservatories and hothouses. The laboratory is very conveniently arranged and well equipped; each student is provided with a simple dissecting microscope, and each advanced student with a compound microscope for his special use in minute investigation.

Prof. W. G. Farlow, a former pupil of Prof. Gray, and later abroad with De Bary and Thuret, has charge of the botany at the Bussey Institution, (also a department of Harvard), where he is establishing a laboratory, with all the modern appliances for cryptogamic botany. He will give especial attention to the lower fungi so injurous to plants and animals, and about which there is a great want of positive knowledge. Prof. Farlow also gives instruction in the regular course, in cryptogamic botany, especially to intending medical students. He is full of enthusiasm in his specialties, and we look for valuable results from his work.

Prof. C. S. Sargent is in charge of the botanic garden, which contains many old specimens of rare plants, and which has recently been greatly improved by bringing the species into botanical order. He has charge of the horticulture at the Bussey Institution, and will establish the Arnold Arboretum, for which there is abundant provision, and which, with his thoroughness and enthusiasm, will be the finest arboretum in America.

Besides the regular collegiate course, there is at Harvard a summer course especially for teachers; this was started by Prof. Gray, and is now continued. Last summer there were about 20 teachers from various parts of the country, a majority of whom were ladies, who, as Prof. Gray says, "worked like good fellows." Some have been there two and others three years in succession, and all are learning to be good investigators and better teachers. In addition to these, Prof. Farlow contemplates a summer course on the lower cryptogamic plants, at some place upon the sea shore not yet selected.

It will be seen from this account, that there is at Cambridge, ample provision in the way of instructors and apparatus for all who would study botany in general or in special departments. The herbarium is not only the largest in the country, but one of the most valuable in the world, and is well supplemented by the great abundance of living plants in the garden and houses.

Voices from the Bee Hive.

INTERPRETED BY M. QUINBY.

An acquaintance of several years with the Queen Bee and her numerous subjects, and a close attention to her and their teachings, lead me to believe that I can faithfully report what is done within the hive. There can be no doubt that bees have what answers them the purposes of language, but these reports will give what is seen quite as much as what is heard.

How cold the weather is! No man unless he be a perfect coward, will be afraid of stings at this season. Indeed, it is the fault of his own carelessnes, if he ever gets stung at all. We love warmth, and the colder it gets, the closer we cluster together. One of us, exposed alone at freezing temperature, would soon grow stiff, and then die outright. If a half dozen were grouped together, they could endure it longer, as they would help keep one another warm, but the heat created by these few bees, would amount to very little; we must be in a large cluster in order to help one another much. The bees of a full colony create heat enough to allow us to withstand the coldest weather of this climate, for a short time at least; the more there are of us, the warmer we are. The colder the weather, the denser we cluster. But those on the outside have the worst of it, whatever they may do, their backs will be cold, and unless they can change places with some of those on the inside, they must drop, and expose those next below them to the cold air. We understand this, and as soon as those on the outside become chilled, they change places with others on the inside of the cluster, and so matters are equalized. The colder it is, the more we must eat to keep up the animal heat, and food must be close at hand, and we must change places so that each one can get his share. A family of us clustered between the combs, generate no little heat, which is confined by the hive, consequently the air which surrounds us, provided our hive be properly built, is very much milder than that outside. If the temperature is such that we can change places frequently, we keep in perfect health. Our food being honey, is, of course, liquid, and if the temperature is not too low, much of the watery portion of this passes off through the pores of our bodies, and the solid portion is evacuated in the dry state. As long as we are in health, this natural condition of things continues. The bee-keeper can readily know our sanitary state, by examining the bottom board of the hive; if he finds one single drop of liquid excrement, he may be sure that one of us is sick, and if there are several drops, there is trouble among us, for the liquid excrement will be in proprotion to the amount of disease. My physicians tell me that they know of no other cause of diarrhea, than low temperature, and that when the cluster is large enough to sufficiently warm the interior of the hive, the disease never occurs....But in extreme cold weather! yes, there is where we have the most trouble, especially if it is long continued. You who have stoves, can warm yourselves, but we have to be our own stoves, and warm not only ourselves, but the air around us, which is constantly getting cool from contact with the cold sides of the hive. When it is so cold that the evaporation can not take place through the pores of our bodies, no matter where the hive may be, then disease appears. In the old box hive, in the open air, the sun would shine upon it for the most of the day, and the little warmth that would strike through the sides, together with what we could make ourselves, kept the interior warm enough to allow us to change places frequently, and to keep in perfect health....People should consider the temperature in shading the hives; I know that fewer bees are lost on the snow when hives have the full sun, than when they are shaded In your living rooms the air is full of vapor; you do not notice it until the outdoor air cools the window glass, so that the invisible vapor condenses upon it; now the same thing takes place in a hive. When the external atmosphere is very cold, the air of the hive coming in contract with its sides, moisture is condensed, and even the combs that are not kept warm by the clustering of the bees upon them, become so cold, that the moisture that our bodies give off to the air of the hive, condenses upon them. At first this moisture is in exceedingly fine particles, but they increase in size and number, and finally run together, and form drops large enough to run. A comb kept moist in this way will finally mould. If the cold continues, these drops freeze upon the outside combs, or fall upon the bottom, and freeze there, and if the opening of the hive be small, it may freeze there, cutting off all ventilation, as a consequence of which we are all smothered. When the outside air is at 50°, we have no trouble, for then the vapor passes off through the smallest openings, and a very small cluster will safely pass the winter at that temperature, which would fail in the open air.... If we are housed, pray do not make us too warm, and above all, let us be quiet. If we are in a warm place, the least excitement among us creates too much heat. I know of an instance, in which one of our families was placed in a room, and so closed, that not a bee could escape. So long as it was quiet, they were comfortable and happy. But some children had a frolic in that room, and their noise so excited the bees that the whole family of them was ruined. If those who find it necessary to move hives from a cold to a warm situation, would be careful of their movements, and not disturb us with the least jar, we will be all the better.....Many stupid or indifferent people undertake to keep bees, who have not the least idea of what we want. We are always willing to give all the honey we do not need for winter, but such people do not know how to allow us to give it to them. Pray tell all who do not like bees, and all who do not care enough about us, to study our ways, and understand our nature, to let us alone. Such persons, who do not begin right, and who do not know enough to stop when they are wrong, but will persistently follow their own way, must not complain, if we do no more for them than we can help, and if, when we see them going wrong, we will use the only language they will understand—a sting—to remind them that they are not treating us properly.

Do Bees Make Honey from Sugar Syrup? is asked by "M. F. B.," Smithsburg, Md., to which Mr. Quinby replies: "I would first reply in the negative, yet it is converted into honey as much as the juice of apples, pears, grapes, and many other juices, that bees obtain after the flowers fail in the fall. The flavor of these juices may not suit the human palate as well as the nectar of flowers, and will perhaps explain, why honey, strained from the combs in the body of the hive, after these juices have been collected is not of as good flavor as the honey extracted while bees are collecting from flowers. Any substance containing sugar, will sustain bees. Syrup will answer every purpose, and should be consumed by *them*—not left to strain out—as the flavor is inferior to that of pure honey. When syrup is fed, it should be done so sparingly, that it will all be consumed by the bees. The apiarian who gets the reputation of furnishing the best flavored honey in the market, will sell it most readily.

Science Applied to Farming.

BY PROF. W. O. ATWATER, WESLEYAN UNIVERSITY.

How Science is Saving Money and Increasing the Profits of Farmers.—Experiment Stations in Europe.—Interesting Results.—Their Importance Here.

American farmers are spending, every year, millions of dollars for artificial fertilizers, such as guanos, superphosphates, bone-dust, poudrettes, etc. Some of these are worth more than they cost, others are very poor, and many are fraudulent. And no one can, from their appearance, distinguish the good from the bad. But a chemist, by analyzing a sample, can tell exactly how much of valuable materials any fertilizer contains, and how much sand, colored earth, or other worthless matter has been mixed with it. Our farmers generally buy fertilizers without any intelligent idea of their composition. This does not encourage honest dealers to sell good articles at fair prices, but it does encourage dishonest men in vending poor and adulterated fertilizers. In Europe they manage these things better. When a German farmer buys a fertitizer, he pays for it, not by the hundred weight or ton, but according to its warranted content of valuable fertilizing ingredients, such as nitrogen, phosphoric acid, or potash. Chemical laboratories are provided by the government and by agricultural societies, in which both dealers and consumers can have fertilizers analyzed at moderate prices. A system somewhat similar to this prevails in England, and a few attempts in the same direction have been made in the United States. The result of this control-system in Germany is that farmers there get much better fertilizers than we do, and at much lower average prices. Some of our fertilizers are as good as any in Germany, and are sold nearly as cheaply. But comparing the average composition and prices of standard articles, there and here, we probably pay forty or fifty per cent more for the valuable ingredients of our fertilizers, than they do. Besides this, our markets are flooded with bad fertilizers. Of one well-known poudrette, for example, one-half the weight was found to be sand, and fragments of brick and coal. Besides some organic matter of *comparatively* little value, a ton contained about $2.50 worth of nitrogen and phosphoric acid, yet this stuff has been sold largely throughout the Eastern States for $28.00 per ton. Dealers have made a regular practice of mixing sand with Peruvian guano, and selling it for the genuine article. Waste chemical products are disposed of for several times what the valuable ingredients in the pure state would cost, if obtained elsewhere. Many so-called superphosphates are not *super*-phosphates at all. That is to say, the phosphoric acid they contain has not been so treated with chemicals, that it will dissolve in the water of the soil and thus become quickly useful to the plant.

Such impositions are also practised in Germany, but there they are few, and are speedily detected; here they are numerous, and seldom checked. Years ago the English and German markets were as much beset with poor fertilizers, as ours are now. The improvement in Germany is due to the same cause that during a century past has been raising Prussia from a comparatively insignificant position, to the first rank among the powers

of Europe, to wit, SCIENCE and SYSTEM. It is a spirit of careful economy, coupled with an understanding of the whys and wherefores of things. In agriculture it has manifested itself in the general diffusion of scientific knowledge among farmers, in the establishment of agricultural schools and *Experiment Stations*, where science and practical experience are so combined as to make them of the highest service to the community.

These EXPERIMENT STATIONS consist of chemical laboratories, connected with stables, fields, gardens, or greenhouses, where men of high scientific acquirements, as well as practical skill, are engaged in studying and experimenting on questions of special importance to cultivators. Take, for example, the one at HALLE, in the Province of Saxony, in Prussia. In this province, about as large as the State of Connecticut, tens of thousands of tons of artificial fertilizers are used every year. At the laboratory of the station at almost any time, but more especially in spring, you will notice bottles, bags, and packages of various sorts and sizes, containing samples of fertilizers, brought there for analysis. Some of these come from dealers, who sell their fertilizers at prices based upon analyses made at the stations. Other samples are brought in by farmers, to ascertain if they are as good as warranted by the sellers. From 1,000 to 1,200 of these analyses are annually made at this station. In 1866 there was in the Province of Saxony a considerable excitement about poor fertilizers, which caused a much more vigilant control to be exercised; the result was a great improvement in the general character of the articles sold there in 1867. In Peruvian guano, for instance, there was an increase in the amount of nitrogen of one per cent, or twenty pounds to the ton. It is calculated by the director of the experiment station at Halle, that in this single item there was a saving to the farmers of $20,000 gold in that province alone. Taking into account the increase in the other valuable elements, not only in guanos, but also in other fertilizers, the *saving in that one small province must have amounted to over* **$100,000** *gold.*

The experience in England has been similar to that in Germany. The condition of the fertilizer market there fifteen years ago was about what it is in America to-day. Now it is about the same as in Germany. Prof. Voelcker, chemist to the Royal Agricultural Society of England, said to the writer, in effect: "Years ago farmers in England used to buy their guanos and superphosphates without much reference to what chemical analysis would say to them, being influenced in their choice more by general recommendations and by the *price per ton*. This tempted manufacturers to make inferior articles and sell them at low prices. But farmers have learned that a guano with twelve per cent of nitrogen is worth more than one with only ten per cent, and that a real *superphosphate*, containing soluble phosphoric acid, is worth more than one in which the phosphoric acid is insoluble—questions readily solved by the chemist. They now give the preference to the better articles. The result is a competition based upon *good quality* rather than *low price*. And, while a ton of superphosphate or bone-dust costs no more now than it used to, it is more valuable by half. And further, by this means, the inferior articles and humbugs that formerly infested our markets are kept away."

In the States on the Atlantic sea-board, from Maine to Georgia, are sold, every year, several million dollars' worth of artificial fertilizers. Suppose that in a certain section, say in New England, one million dollars' worth is used annually—a very small estimate. And suppose that, by the establishment of two or three *Experiment Stations* at small cost, a control-system like the German should be introduced, and the average value of the fertilizers raised ten per cent, which would doubtless be far below the real result. This would be a saving to the farmers of at least **$100,000** per year. Further than this, when farmers find they are sure of getting good fertilizers, they will buy more of them. The produce of the farms and the profits will thus become greater, and the country be so much richer.

But analyzing fertilizers is a very small part of the work of the European Experiment Stations. Their labor is largely devoted to investigating the effects of different fertilizers, and methods of manuring upon different crops, as well as the function of the various ingredients of the food and the best methods for the feeding of domestic animals. For example, a wheat field is divided into small plots. On one of these is put potash; on another, a compound of ammonia, which contains nitrogen; on another, a superphosphate, containing lime and phosphoric acid; on another, a mixture of these; on another, stable manure, etc., etc. The manures are all carefully analyzed and weighed, and the crops measured. By such exact experiments the best fertilizers for various crops are accurately learned.

The experimenters raise plants with the roots grown in jars of water, and having no soil at all. They dissolve in the water potash, lime, phosphoric acid, and other substances that make up the food of the plant. They put different mixtures in the jars, and note in which of these the plants grow well, and in which ones they do poorly. By such trials repeated many times, they learn what substances are necessary for plant-food, and of course indirectly what are best for different crops. Dr. Nobbe, Director of the Station at Tharandt, raised in this way a plant of Japanese Buckwheat nine feet high, weighing 4,786 fold the weight of the original seed, and bearing 796 ripe and 108 imperfect seeds. In another jar, *containing the same materials, except that the potash was left out*, the plant grew only two or three inches, and bore no perfect seeds. This experiment, often repeated with the same result, proved that the plant could not flourish without potash. In the same way it was proved that the plant would not grow if there was no iron or no lime in the water. By such careful experiments chemists have shown that not only carbon, oxygen and hydrogen, which agricultural plants get from the air and from water, but also potash, lime, magnesia, iron and phosphoric acid, which they get from the soil, are indispensable to their health, if not their life. The necessity of chlorine and soda is doubtful. The experimenters have also proved what is the office of some of these substances in the plant. Nobbe has learned that without potash no starch can be formed in the leaves. Much of the material of all common plants is first formed in the leaves as starch, and this is one of the largest constituents of all our grains, and of many root fruits. So it is easy to see why potash is so valuable as a manure, and why unleached ashes are so much better than those from which the potash has been leached out.

Equally interesting and valuable are the experiments in cattle feeding, some account of which will be given another month.

Ogden Farm Papers.—No. 59.

BY GEORGE E. WARING, JR.,

Deep Cans for Milk.

The following letter speaks for itself:

"COG HILL, McMinn Co., E. Tenn., Nov. 14th, '74.

"Dear Sir: The report of experiments with deep cans, mentioned in your Ogden Farm Papers, No. 57, induces me to write you a few lines. I have used shallow pans for several years past—or rather winters—making full cheese in summer, and skim cheese and butter in winter.

"Last spring I got a lot of deep cans made—not because I considered them superior for butter making (though I have read all your Papers for several years)—but only because I wanted to make both butter and cheese all summer, and expected they would keep the milk in better condition (free from taints) for cheese, and would retard the forming of cream to some extent, and thereby enable me to produce a richer skim-cheese. In the first surmise I was quite correct, the milk was always sweet and pure after twenty-four hours, in the hottest weather, submersed in spring water of 60°; but in the second I was badly disappointed. I have never worked as blue-looking milk into cheese before. Though I am unable, at present, to give figures, I am fully satisfied that I get more butter out of my milk with deep cans, than with shallow pans, simply because the milk gets thick in the latter before all the cream has time to rise.

"I am sure there must be a mistake somewhere, in the experiment of the Solebury Farmers' Club. If they only got one inch of cream from the deep cans, they certainly did not skim deep enough. I suppose their cans are about the same size as mine, 18×8 inches. As soon as I had read your paper, I measured the cream on one of my cans; it was 3½ inches, and I believe my milk is poorer now, than any time of the year, mainly because most of the cows I am milking now have young calves.

"I am highly pleased with the deep can system. It enabled me to make both butter and cheese in the hottest weather last summer, though working under great disadvantages in regard to arrangement of dairy house. (Signed) WM. L. RAHT."

I hope that Mr. Raht will take the trouble to make some careful measurements, and send me his results for publication. I have a pretty strong conviction that I am right, and that the Solebury Club people are wrong, but I am not so situated that I could assert the result of any experiment I might make, with absolute certainty; this can only be done by one who can give his personal attention to the details of the dairy, every night and morning during the trial. Unfortunately this is not my condition, and I shall be, for this reason, all the more thankful for assistance from others. So far as it goes, and it seems to go pretty far, Mr. Raht's results are just what I should expect to accomplish at Solebury, were I there to conduct the experiment for myself.

As I write, I have a letter from Mr. L. S. Hardin, of Louisville, Ky.: "You will be interested, and perhaps amused, with the challenge I have sent the Practical Farmer, to the effect that I will bet a Registered Jersey cow calf, that milk set deep at 49°, will raise more cream than the same milk set shallow at a higher temperature, such is my experience. They only got about seven per cent of cream out of the milk, a miserably poor showing for either deep or shallow setting—one inch of cream out of a bucket sixteen inches deep!"

Dry Earth in Stables.

I am asked about the use of dry earth in a cow stable. The writer has seen it stated that earth which has been used in an earth-closet, is less valuable for manurial purposes than the manure itself would have been without the admixture; he has planned to use dry earth in his cow stable, but does not wish to do it to the detriment of his manure heap. I have tried to keep watch of the discussions here and in England, on this subject, and have never seen anything tending to so strong an argument against the use of the earth-closet earth, as the objection above indicated. Dr. Voelcker, who is a very high authority, published the results of his investigations as to the value of earth-closet manure, showing that it was very much less than the advocates of the system had claimed. When I saw him in London, I asked him how he accounted for the small amount of fertilizing matter in the samples analyzed. His reply was that there is but a small amount in the manure itself, nearly the whole of all animal fæces consisting of water and refuse matter of little fertilizing value; the nitrogen and fertilizing manurial matter, though large in the aggregate when large populations are considered, are small when compared with the large amount of earth used in the closet. I especially asked him whether there was, through oxydation or otherwise, any actual destruction of fertilizing parts; this he distinctly disclaimed, and said that the only bearing of his criticism was that his analyses showed the same small proportion of material, that a mathematical calculation of the quantity and character of the fæces, and the quantity of the earth would indicate. I should say that unquestionably the use of earth in a cow stable, must be productive of the very best results, not only as saving all of the fertilizing matter present, but also, and very largely, by reason of the development of available plant food in the earth itself, in consequence of the chemical action going on in the manure it contains. In addition to this, the mere increase of bulk, enabling us to spread the manure more evenly over the ground, and the increased effect of the manure as a mulch or covering, when used as a top-dressing, constitute a sufficient reason for the use of earth in very liberal quantities. I have little doubt that my correspondent's experiments in this direction, will result satisfactorily.

Cooking Food for Cows.

The following question comes from Canada:

"I read your papers in the *Agriculturist*, but have not had the whole since they first appeared. I remember your description of your barn and steaming arrangement. Now I think your opinion as to whether steaming feed for cows pays or not, would be valuable, as you have had some years' experience. Will you be kind enough to give it in the next paper, and oblige one who wishes to make the most of his feed? I have forty cows; sell milk the year round, (at 4 cents per quart in summer, and 5 cents per quart in winter). To commence this winter, have plenty of clover and timothy hay, and for slop shall use ground oats and wheat bran; have horse-power and straw-cutter, and plenty of water;

can get a new tubular four-horse-power-boiler, for $150; firewood is $3 per cord. Now, will it pay to cut the hay and mix the other mill stuff, and steam? I am aware that some who have tried it say they save thirty-three per cent; then again, we are told that it costs more than the gain. I am rather inclined to buy the boiler and try it, but shall wait until next month's paper comes to hand.

"Hay is worth here, $14 per ton, oats 36 cents per bu., bran $15 per ton, butter 30 cents per lb."

My principal experience in this direction, has been with hay from $16 to $20 per ton, oats at about 60 cents per bushel, corn 75 cents per bushel, bran at $30 or more per ton, and fuel at about double the cost stated above. Milk has been worth less than twice the price given, and butter rather more than twice. Under the circumstances, I have found steaming to be decidedly advantageous. We have never made any distinct trials to determine just the amount of the saving. Indeed, such trials are always difficult, and require the consideration of physiological influences to an extent, for which few practical farmers are prepared. We do much less steaming now, than when we bought nearly all our forage, for the reason that our own hay is early-cut, and of excellent quality, and doubtless very easily digested. The profit of steaming such hay as this, is, of course, much less than when the cooking is applied to late-cut, coarse forage, whether hay, straw, or cornstalks, containing a large amount of vegetable fibre, which cooking renders more or less digestible. Steaming is especially important as a means for curing mustiness, or stale flavor in imperfectly cured fodder, and in diffusing throughout the mass the flavor of the grain cooked with it.

In view of all the circumstances described in the above letter, I should not hesitate to recommend the regular use of steaming throughout the winter. Whether the result will be a saving of thirty-three per cent, or more or less, will depend on the condition of the food in its natural state; all will be benefited, but the poorer the original quality the greater the advantage of steaming.

Feeding a Family Cow.

I have received from Athens, Penn., a request to answer the following questions, which are asked with reference to a fine four-year-old heifer, recently calved, and kept to provide milk and cream for a family. They are applicable to the circumstances of such a large number of people, and are so much in the tenor of other letters frequently received on the same subject, that it seems worth while to answer them at length....1st. Shall I keep her in a shed thoroughly protected from north, east, and west winds? or in a stable, lighted with windows on the west side, and no sun unless double doors in south side are kept open (stalls face the East, and have no windows)?....2nd. Would you advise to feed good timothy, or clover hay? cut? or in rack?....3d. Of corn-meal, wheat bran, ground oats, buckwheat bran, ground buckwheat, (not separated), linseed-oil cake, cotton-seed cake, *which ones*, and in *what proportion*, *alone* or *mixed*, would you advise? dry? or wet with warm water? ....Object, health and good condition, and good yield of good milk throughout the winter....4th. Would you season food with salt; if so, how much? If alone, how often, and in what quantity?....5th. How often should she be watered? ....6th. Where can I buy cotton-seed or linseed meals in New York? In what shape is it sold, in bags, or any weight you wish, and at what price? ....7th. I do not wish her to be served until July, 1875. Am I right?....8th. Can she be milked with safety until a month before calving, in 1876? My desire is to have good general rules for feeding milch cows through the winters."

Replies: (1) In a moderate climate, or during mild weather in any climate, the shed described would be better than the stable; but in severe weather it would be insufficient, and if one or the other must be selected for the winter quarters, perhaps the stable would be best. (2) Clover hay "every time." If of good quality, not too coarse, and not smoky, it may as well be fed long. Unless it is first-rate, it will be more completely eaten if cut; so far as the cow herself is concerned, it would be better to feed it uncut, and let her reject all but the best, but for economy of feeding, the cutting is preferable. (3) Buckwheat bran, and probably buckwheat meal, while stimulating the flow of milk, make it less rich than it should be for family use. Buckwheat bran is considered a very good milk-dealers' feed. Linseed-oil cake, and cotton-seed cake, are both excellent for certain purposes, and when fed in moderate quantity; I should hesitate to give a family cow more than half a pint of either per day, for the reason of their tendency to give a tallowy character to butter; a very small quantity can not have this effect, and is every way beneficial as an element of the feed. If all the articles you mention are equally available, I should say decidedly, that ground oats should form the staple food; they are more costly, but in every way better than corn meal; but if the cost is an important object, corn-meal may be added in the proportion of one-half or less, without material disadvantage; wheat bran of good quality, I would feed once a day, but not more than two quarts. If the hay is cut and wetted, the ground feed should be mixed through it, but if dry hay is fed, it is better to feed all grain dry, (in a deep tub, so it will not be thrown out and wasted), because it must be eaten more slowly and masticated more thoroughly; it can not be swallowed until it is thoroughly moistened, and it has to be well chewed before it is moistened. (4) No. Get a good lump of rock-salt, and place it where the cow can lick it at pleasure. If fine salt is used, feed it to the animal in small quantities, and at decreasing intervals, until her greed is satisfied, and after this keep a box of salt within her reach. (5) The oftener the better, provided, which is very important, that it be not with too cold water; nothing will help more too keep up the winter yield of a family cow, than a little hot water poured into her drink, raising it to 70° or more. (6) Linseed meal can be bought in any considerable town, from feed dealers. Cotton-seed meal would perhaps have to be procured through an agricultural warehouse. Both are sold by the hundred-weight, in bags. (7) I think she is too young to be allowed to go so long. She calved in September, and your plan would allow 10 months before she is served, which I fear would be injurious. You had better let her take the bull now, or when she will, which will bring her in late next year; then let her go farrow until June, '76; and then, if you like, until July, '77; this will bring her around gradually to the period you desire. (8) She can, perfectly—if she will—but I would make sure that she should be dry for the full month if possible.

CARR & HOBSON'S DOUBLE FURROW PLOW.—(*For Description see page 20.*)

Great Yield of Mangolds.

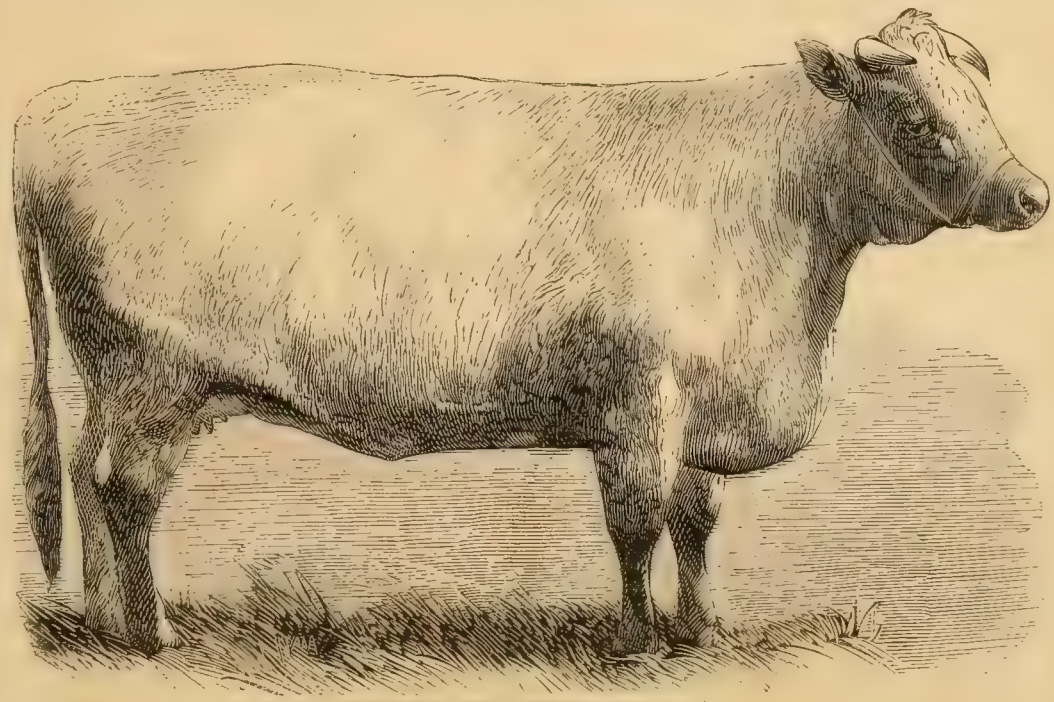
In the *Agriculturist* for April, 1873, (page 139), I gave an account of my visit to the Earl of Warwick's Sewage Farm, near Leamington, to which it may be interesting to the reader to refer. In a recent number of the "Agricultural Gazette," there is an account of the mangold crop of this year. It occupied twenty acres, partly Orange Globe, and partly Intermediate Globe. The crop was probably larger than has ever before been grown. One acre was measured, and the produce carefully weighed, amounting to 82 tons of 2240 lbs. each, (about 3675 bushels.) The field had been in Italian rye grass in 1871 and 1872, and wheat in 1873. During the past four years it has received no other manure than the sewage, applied as described in a previous article. The rows were twenty-four inches apart, the plants being thinned out to twelve inches. The Gazette says: "The roots are of a very large size, and tons and tons of them could be selected, which should not exceed 100 roots per ton."

This crop indicates, as well as anything can, the advantage of thoroughly high farming and good manuring, with the added improvement of irrigation. In our climate it would perhaps rarely be practicable, to make a profitable use of town sewage for agricultural purposes; but it is practicable to give thorough cultivation, to manure heavily, and in very many cases there are facilities for irrigation which are neglected, to the great detriment of our crops. It may, perhaps, not be possible, in many cases, to achieve such a remarkable success as here described, but the fact that such a growth of mangolds is possible, should stimulate our dairy-farmers to the production of very much larger crops, than have thus far been known this side of the Atlantic.

Tan for Mulching.—H. Sackersdorff. There is a great difference of opinion as to the value of tan as a mulch. A recent writer in *Revue Horticole* cites several instances in which upon fruits and vegetables its effects were disastrous. Several market gardeners near Paris lost all their winter lettuce by covering the beds with tan. Any ill results must be due to the fact that the bark was not thoroughly exhausted. When the soluble matter is all extracted from it, the effect of the tan can only be a mechanical one. Where there are such different experiences, it will be safe to expose the tan to the action of rains for some months before using it.

The Cow "Victoria Victrix."

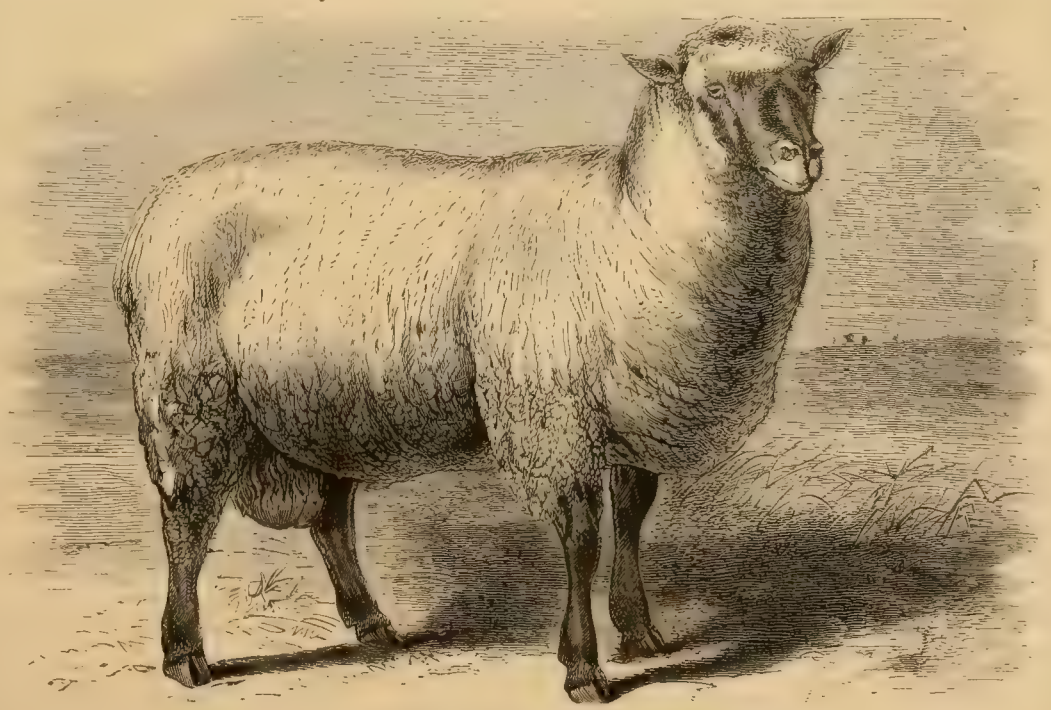
The engraving here given is a portrait of a Shorthorn cow, remarkable as being a choice "Booth Cow." In the rivalry between the Booth and Bates families of this breed, the first-named is left far behind, while the other enjoy all the popularity and profit, at least if excessive prices result in profit. The late wonderful advance in favor, amongst a certain class of breeders, of the various families of Shorthorns, which owe their origin to Thomas Bates, has left the Booth tribes in a position which is more useful than ornamental. There is just now little honor belonging to the Booth stock, but it would be a serious mistake to suppose them therefore deficient in merit. In fact, among Shorthorns at the present time, it may to a great extent be said, that "reputation is oft got without merit, and lost without deserving." The cow of which the portrait is given, is one of the most reputable of these neglected Booth cattle. In 1871, as a calf, she received the second premium at the Royal and Yorkshire Agricultural Shows, and several first premiums at minor shows. Since then she has taken a large number of prizes, and in 1874 received the first premium as the best cow in calf or in milk, of any breed, at the West of England Agricultural Show. Her breeder and owner is Lady Emily Pigot, of Newmarket, England. This lady's herd consists of about 30 animals, which are descended from two cows of the best "Booth" tribes, the "Mantalini" and the "Boughton." The produce of these two cows have been very closely bred together, and the whole herd possess almost the same ancestry, as this beautiful cow. She is four years old, of a light roan, has an elegant frame, with broad, level back, and is an excellent milker. The portrait is from a photograph, and represents her as she is. In this case the parallel ruler and the square have not been called into requisition, to produce one of those wonderful productions of art, which strangely enough seem to please some old and experienced breeders, and are accepted by them as portraits. This portrait, and the estimation in which this cow is held, are sufficient recommendation to public notice of a genuine "Booth Shorthorn." It is gratifying to know that of this class of stock there is a liberal supply in America, and that they are held at reasonable prices. It is from this stock that the "serviceable bulls" are to come, for just now its rivals have attained an eminence, which places these beyond the reach of farmers and business-breeders, and confines them to a class of fancy breeders, who seem to deal with each other in a manner that savors somewhat of the more speculative ways of the stock market. This cow proves that the neglected Booth stock possess some excellencies, if they have some defects.



SHORTHORN COW—"VICTORIA VICTRIX."

A Fine Southdown Ram.

The value of the Southdown sheep in America for the purpose of crossing upon and improving our common sheep, is probably greater than for the purpose of perpetuating the pure race. There are few flocks of Southdowns that are kept up to a high standard without renewed importations, but there are many cases in which our common sheep have been materially improved by admixture with this blood. Again, the Southdown is the basis from which in England several cross-bred races of sheep have originally sprung, and these races have been since interbred, until a constant type has prevailed, and a permanent breed been secured. Such is the origin of the Shropshire sheep, which is one of the most hardy and profitable races in England. The Hampshire and Oxford Downs are also indebted to the Southdowns for some of their good qualities, and in fact it is as an improver of other races, rather than as a distinct race, that the Southdown excels in this country. We need to establish American breeds of sheep, and to stop importing with a view to maintain the standard of the English breeds. We need to do with other sheep, what has been done with the Merinos, establish an American race that suits our climate and other circumstances better than any foreign race can. To do this for mutton sheep, and for a certain medium class of clothing wool, the Southdown breed furnishes an admirable groundwork. The animal of which the portrait is given in the engraving, is now in use by one of our most careful and successful breeders, in building up a race of American sheep, which shall be as well, or better, suited to our especial needs, as the imported Shropshire. This yearling ram was bred by Col. Morris, of Fordham, N. Y., and is at present the property of Beacon Stock Farm.



SOUTHDOWN RAM.

Walks and Talks on the Farm.—No. 133.

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We have had remarkably fine weather for finishing up our fall work, and getting ready for winter. I have plowed the corn-stubble, the potato land, and fifteen acres where we had mangels and rutabagas. I also broke up in September sixteen acres of timothy and clover sod, and in November fifteen acres of clover sod. The latter I propose to sow to barley in the spring. We ought to have plowed it six weeks earlier, and "fall-fallowed" it. But we were short of pasture, and I kept it for the sheep as long as possible. They ate it down very bare. We plowed it with a three-horse jointer plow, and every particle of sod was buried out of sight. We shall not plow it again in the spring. A gang-plow or cultivator, with the free use of the harrows will, I think, give us a fine seed-bed for the barley and clover seed. "I think," said the Deacon, "you would get just as much barley, if not more, if you had let the sod lie undisturbed until spring. The rains will wash a good deal of the richness out of this plowed land." If it was light, sandy land, there would be some truth in this idea. But as the soil is mostly rather a stiff loam, I think it will be all the better for the fall-plowing. The knolls are sandy, but what the rains wash out of these, the lower land in the same field will retain, before the water gets into the underdrains. And I propose to give the knolls a slight top-dressing of well-rotted manure. "You summer-fallowed this field for wheat," said the Deacon, before it was seeded down, and I should think, instead of seeding it down again with the barley, you would sow wheat after the barley, and seed down with the wheat." Perhaps this would give me the greatest immediate profit. In fact, I think this would be the case, but this piece lies between a field of winter wheat on one side, and the field where we had mangels on the other. The wheat will be seeded down in the spring, and the mangel lot will be sown to barley, and seeded, and I want to seed this middle lot, so that I can take up the fences, and throw the whole into one forty-acre lot, all seeded down with clover. The question of fencing has, I am sorry to say, a good deal to do with my system of rotation.

"I see," said the Deacon, "that Mr. Geddes has written another article for the Country Gentleman, against your pet summer-fallow theory. And Mr. Root also contends, that plowing and working land, instead of enriching it, as you claim, tends to exhaust it."—"I know he does," I said, "but what does our old and experienced friend Dewey tell us. He had an old fence between two lots, which had been worked and cropped for many years. On removing the fence and plowing the land, and treating it precisely as the land on each side, he found that this strip of new land, neither at first nor afterward, produced as good crops, as the land which had been cultivated and cropped for years. Those who contend that tillage will not enrich land, base their opinion on the fact that it adds nothing to the store of plant-food in the soil. But they overlook the important truth that *fertility depends, not on the aggregate amount of plant-food in the soil, but on the comparatively small amount that is in a soluble or available condition.* Now, while tillage will not add to the soil a single atom of potash, phosphoric acid, and other elements of plant-food, it will, and does, favor the decomposition of the organic, and the disintegration of the inorganic matters, lying dormant in the land.

If you should make a pit or hole in your barn-yard, and should throw your manure into it, and if your buildings are not provided with spouts, and the water from the yard flows into this pit, the manure will probably be so wet, that no fermentation can take place. The water excludes the air, and the manure will remain raw and dormant for months or years. If you drain off the excess of water, and turn over the manure, so as to let in the air, fermentation will be likely to commence at once, and this heap of raw manure will be decomposed, and the inert plant-food which it contains, will be changed to active, fertilizing material. And so it is with the soil. Drain off the excess of water. Stir it frequently and thoroughly, so as to let in the air, and the inert plant-food which it contains, will be gradually decomposed, and will become slowly available.

"But suppose," said the Deacon, "the land does not contain any inert plant-food."—"Then," I replied, "cultivation will not enrich it. The poor, sandy knolls on your farm and mine contain very little of this inert plant-food. They are dry, and so loose that the air penetrates into the soil without plowing. And yet these knolls are plowed deeper and better, than the richer and heavier land in the intervales. If the ground is dry and hard, and you have not a good point and a careful plowman, the plow will be likely to turn a furrow only four or five inches deep on the clay spots, while it will go almost beam-deep on the loose, sandy knolls, which hardly need plowing at all. Drain these clayey intervales, and plow them frequently and well, until the soil is deep and mellow, and you will soon see whether draining and tillage will not enrich the land."

And now in regard to Mr. Geddes' recent experience in summer-fallowing. The facts he gives are interesting. He had ten acres of land that had become infested with quack-grass (*Triticum repens*). In the fall of 1872 he gave the piece a thorough plowing, just before winter set in. In the spring and summer of 1873 the land was worked to kill the quack, no crop being sown. In other words, the piece was "summer-fallowed." We will call this field No. 1.

Another field of 31 acres, which we will call No. 2, was sown to barley in the spring of 1873. Previous treatment not given. But Mr. Geddes tells us that the expense of working it was about the same per acre, as for the summer-fallowed field. After the barley was off, this field was plowed once, and sown to wheat. Four or five acres of the field, on the slopes and ridges, were treated to a dressing of manure.

Another piece of nine acres, lying alongside of No. 2, with a fence between, had been in grass many years. It was a rough pasture, and needed re-seeding. It seems to have occurred to Mr. Geddes at the last moment that, as he was going to sow No. 2 to wheat and seed it down, it would be a good plan to take away the fence, and break up this old pasture, drill in some wheat, and seed it down again with timothy and clover. This he proceeded to do. The fence was removed, the land plowed, some manure put on the sharp slopes and ridges, and the wheat drilled in Sept. 27. This we will call field No. 3. And now for the result.

No. 1.—Summer-fallow, was sown Sept. 9 and 10 with wheat. "Along one side, a narrow strip was sown with Clawson wheat, as a comparative test—the remainder of the field being sown with Diehl wheat. The crop came up finely, so that in five days the lines of the drilling were plainly seen. The fall growth was very strong, and the wheat did not suffer in the very hard, open winter which followed." The yield on this summer-fallowed field was 38 bushels of wheat per acre. Mr. Geddes does not seem to have kept the Diehl and the Clawson separate, but he tells us, judging, I suppose, from the narrow strip of Clawson, that "had the summer-fallow being sown to Clawson wheat, we should probably have had 50 bushels per acre."

Field No. 2, barley stubble, was sown to *Clawson* wheat on the 13—16th of Sept. The yield was nearly 27½ bushels per acre.

Field No. 3, old pasture, produced 21 bushels of Clawson wheat per acre.

These are the facts. Now let us look at them. Field No. 2, in the summer of 1873, produced 34 bushels of six-rowed barley per acre, and afterwards it produced 27½ bushels of *Clawson* wheat.

Field No. 1, summer-fallow, produced 38 bushels of *Diehl* wheat per acre. Had it been sown to *Clawson*, Mr. Geddes thinks it would have produced 50 bushels per acre. To make the experiment strictly comparative, therefore, we must either "guess" how much the barley stubble would have produced, if, like the summer-fallow, it had been sown to Diehl, or how much the summer-fallow would have produced, if it had been sown to Clawson. I prefer to take Mr. Geddes' own figures.

Field No. 1, summer-fallow, 50 bushels Clawson wheat per acre, *@* 60 lbs. per bushel...	3,000 lbs.
Field No. 2, 34 bushels barley, @ 48 lbs.....	1,632 lbs.
" " 27½ bush. Clawson wheat, @ 60 lbs.	1,650 lbs.
Total grain per acre.....	3,282 lbs.

In other words, the *two* crops give us about 4½ bushels more grain per acre, than the one crop on the summer-fallow.

Mr. Geddes weighed the straw and chaff, and I, for one, want to thank him for doing so. My own rule is to calculate that a *fair* crop of wheat will afford about 100 lbs. of straw to each bushel of wheat, varying less or more, according to the season, and the luxuriance of the crop. Mr. Geddes found that his summer-fallowed Diehl wheat produced 112 lbs. of straw and chaff to 60 lbs. of wheat. The Clawson wheat, *after barley*, produced about 60 lbs. of straw and chaff to 60 lbs. of wheat.

From all this it is quite evident that the summer-fallowed land was in prime condition. The soil was fine, mellow, and moist. The wheat came up immediately, and was uninjured by the winter. It was evidently a grand crop, and I have no doubt the clover this year, and the clover-seed afterward, will be such as a good farmer likes to see growing on his land. The barley-stubble wheat had more or less manure. Mr. Geddes has some of the best land in the State, and knows how to farm it. It is not a farm like mine that has been run down by being worked on shares. He is not, like me, engaged in the slow and tedious task of trying to renovate neglected and weedy land. He has owned this splendid farm for forty years or more, and it has had all the benefit of his long experience and ripe judgment. If wheat after barley is a system to be generally recommended, it should show good results on this farm. And in fact, the object of Mr. Geddes' interesting letter is to show that this system is more profitable than summer-fallowing.

"And he certainly succeeds in showing it," said the Deacon, "he gets more money from the two crops than from the one crop."—I will talk about that presently. What now interests me, is the condition of the land. Mr. Geddes tells us that "the severe weather of winter, spring, and early summer, told very decidedly" on this barley stubble and pasture wheat, "and when the clover seed was sown in the spring, the wheat was so small, that 15 bushels per acre was as high as it would have been put as likely to yield, by any experienced judge." We all know what this means. I had three or four acres of just such wheat last year. The land was dry and hard, the wheat came up late and weak, the winter, and especially the spring weather, weakened it still more, and the result was one-third to half a crop. But this was not all, and this is the point I wish to make. The weeds came in, and the clover is poorer, and the land in far worse condition than where the crop of wheat was good. I need not complete the picture. It will be three or four years before we have any chance to kill these weeds, and in the meantime they will go on increasing, and producing seed to bother us in the manure and in future crops.

The barley and the wheat together, brought in more money than the wheat alone. This was because wheat happened to be unusually low in 1874, and barley unusually high in 1873 and 1874. We summer-fallow for wheat, on the idea that wheat is usually our best paying crop. But it may well be, that barley on suitable soils is more profitable than wheat. If so, summer-fallow—or rather fall-fallow for barley, and seed down with the barley crop instead of with wheat.

In one of Mr. Lawes' experiments, where the land was summer-fallowed and then sown to wheat, the crop was a little more than from *two crops* of wheat following each other on adjoining land. Mr. Geddes' two crops, one of barley and one of wheat, yield a little more than the one crop on the summer-fallow, and yet the difference is not so great as might be expected. The advantage of the

summer-fallow consists in cleaning the land, and in giving us as much or nearly as much produce from one seeding and one harvesting, as from two seedings and two harvestings. I contend that if the natural yield of wheat—from a given soil, is 15 bushels of wheat—per acre every year, as is the case with Mr. Lawes' experimental wheat field without manure, then it is better, if we can do it, to raise 30 bushels every other year, or 45 bushels every third year—especially if we can manage to raise a crop of clover into the bargain. I have not time to discuss this matter now. But it will be found that *this idea is the keystone of good agriculture.*

So far as practical agriculture is concerned, the great storehouse of fertility is in the soil, and not in the atmosphere. We must plow better, and perhaps deeper and more frequently. Very few of us work our land enough. Mr. Geddes says he plowed up this old pasture because it "did not produce one-quarter as much feed, as when newly seeded." And yet many people think that grass and clover "enrich" land.

Mr. "G. B.," of Nebraska, who asked me sometime ago whether I would plow land when it was dry in August, wrote me again just before winter set in, that if he had waited he should not have needed to ask the question, for, says he, "I could not help noticing that the land plowed in August is in by far the best condition now," and also that "land plowed a year ago, when very dry, now plows up again in much better condition than that plowed when the land was wetter." This is precisely in accordance with my own experience.

A few hours ago a man called on me to ask if I had any insects, worms, or blight, on vegetables, fruits, flowers, or ornamental trees. He had been a gardener for 40 years, and had learned how to drive away the curculio from the plum, to cure blight on pear trees, to prevent the black fly from touching cabbage and turnip plants, and lastly to "innoculate" seed-potatoes, so that the Colorado beetle would give the plants a wide berth. He talked very fluently, and offered either to do the work, or to give me the recipe for a consideration. He had been to Ohio, and was traveling slowly to New York, ridding the country of all insect-pests and diseases as he went along. "Perhaps you have never seen the city of New York," he said. "I was born there, on Division street, and have studied botany, and know all about animals and plants. Plants are porous, and I have two minerals that I boil on the stove for two hours, and apply the solution to the roots, trunks and branches of trees, and all insects, being porous also, know by instinct that the trees have been innoculated and will not touch them, as they have the fear of death before their eyes." He got this off, and much more to the same purpose, very rapidly. He had learned his lesson perfectly. I told him I *had* been in the city of New York—in fact was there yesterday morning, and that there were many orchards and gardens between here and there that needed his treatment, but that I had been away from home for some days, and had not time to avail myself of his skill and knowledge. "But," said I, "there is my friend, the Deacon, a very intelligent farmer and fruit-grower, living in the next house. You had better call on him and tell him I sent you." He left, and I hope he will find the Deacon at home. There are people who will give such a smoothed tongued pretender five dollars for his secret, who could not possibly, during these hard times, find $1.60 to subscribe for the *Agriculturist*, post-paid.

Hugh T. Brooks, of Wyoming Co., N. Y., writes me that he can get lime, fresh and unslaked, for 15 cents per bushel. "Will you kindly inform me," he asks, "whether we can profitably use it in large quantities in Western New York as a fertilizer, and on what soils and crops?"—I have long wanted to use lime on my farm, but hitherto the price has been too high. We have had to pay 25 to 30 cents per bushel. We can now get it for 20 cents. "Yes," said the Deacon, "and you can get refuse slacked lime for 10 cents. Mr. Blank bought 300 bushels to put on his wheat last fall."—"Can you tell me, Deacon," I asked, "how much slacked lime we get from a bushel of lump lime?" I have thought at times of slacking a bushel to find out. I have asked a dozen people, and never found one that could answer the question. The Deacon thought it would "swell up considerable." Boussingault, who is usually accurate, says one bushel will make two bushels of slacked lime. Stephens, in his Book of the Farm, says, a heap will swell up to "three times" the size.

Even if this refuse lime is as fresh and as good as the lump lime, the latter at 20 cents is probably cheaper than the slacked lime at 10 cents. And the latter is not only about one-third heavier, but you can not get more than half as much into your wagon-box, and consequently the item of "carriage" is more than double.

There is one well established fact in regard to lime. It does no good on wet land. You should drain first and then lime. We have much rich, low, mucky land, which, if drained and limed, would be immensely productive. Our heavy clay uplands, if drained and limed, would become lighter and much more productive. Light, sandy or gravelly land, when limed, becomes firmer and much better adapted for wheat. The lime, too, has often a decided effect in stimulating the growth of clover, and when we can grow good crops of clover, we can make our farms richer for all crops.

The Rev. Dr. John Hall, of New York, has written a sensible letter in regard to the best methods of relieving the distress of unemployed people in that city. He would give work in preference to charity. "Happily," he says, "there is little or no special pressure in the country districts. Take, for example, Western New York. It would be a great surprise to me to find any inability among well-to-do farmers of that rich and rising region, to employ labor, if it could be had on reasonable terms. The same remark applies to much of Pennsylvania, Ohio, and Illinois. But we had ample evidence last winter that 'hands' were scarce in the farming counties of this State; not that they could not be sometimes obtained, but that they would not accept work at the prices farmers can afford to pay." —This is quite true. For several years past men have been leaving the farm for the city. If they are tired of the city, let them return and welcome. We want them. It does us all good to have a man come back and tell us that if we knew when we are well off, we should stay at home on the farm. It makes us more content.

But the farmers of Western New York need not go to New York, to find men out of employ. We can find just as many, in proportion to population, in our own cities and villages. We farmers have had hard times for three or four years past. My city friends turned a deaf ear, when I told them their turn would come next. "We have not got over the effects of the panic," remarked a business man a few days ago in New York. "I presume not," I replied. "But it is not the panic that is affecting you. The panic wiped out some hundreds of millions of fictitious values. But there is as much real property in the country, as there ever was—and more. The distress in the city comes from the past distress in the country. When farmers suffer, all classes, sooner or later, suffer also.

We need more labor in the country. There is plenty of work. I was going to say we needed *cheaper* labor. But that is not quite what I mean. The cheapest labor is often the dearest labor. We want trained and skillful men. I am underdraining more or less this winter, and should do much more, if I could get the right kind of men. If the cities have got any bright, active, industrious, sober men to spare, let them come to the country.

And now I want to say a word to the Deacon and to the Squire. The Deacon complains that he can not get labor when he wants it. "You give steady work," he said, "and when I want a man for a few days, I can not get him, because he is engaged to you, or he will not come, unless I give him 25 to 50 cents more a day, than you are paying."—"That is so," said the Squire, "you do us all great injury by keeping up the price of labor."—Now the truth is that it is precisely the Deacon and the Squire, and other farmers who adopt the same system, that not only keep up the wages higher, than we can afford to pay, but make all our men restless and dissatisfied during the busy season. During the winter and spring months they do not employ half the men they need in summer and harvest. And yet I am sure, both the Deacon and the Squire could profitably employ more men in winter and spring, than they now employ during the very busiest days of haying and harvest.—Do not tell me the men are not to be had. The cities and villages are full of them. I have not time to go into this matter. It is one I have often talked about. The real point is to encourage good men to come and settle in the country, either by building and renting houses, or better still, by cutting up some part of our farms, and selling lots at reasonable rates and easy terms to any sober, industrious, married men, who want to get a home for themselves and families.

If this or some similar plan were adopted, many of the inconveniences, which we now experience, would disappear in a few years. The boys and girls soon grow to be men and women, and we should get, what we now so much need, a denser population in the agricultural districts.

Southern Agriculture.

A most interesting report is that of the Department of Agriculture of the State of Georgia. It is a comparative statement of the number of acres planted to different crops in 1873 and 1874. From this it appears that the acreage of cotton has considerably decreased; 1,860,559 acres were planted in 1873, and only 1,603,005 acres in 1874, a difference of 257,554 acres. This is precisely what the *Agriculturist* has long urged upon Southern farmers, to reduce the cotton crop and give more attention to raising food and fodder crops. It is a fact that of late years much cotton has been grown, which has not paid its cost, leaving the planter in debt and under the necessity of buying his food. This is directly contrary to the usual course amongst good farmers, which is to raise all the supplies for the farm at home, to have nothing to buy, and raise a surplus to sell. Under this system there may be less money passing through the farmer's hands, and fewer accounts to keep and settle, and a less show of business; but more of the money which comes into the farmer's hands remains there. It is gratifying to learn that in Georgia this system has been inaugurated, and the increase in the acreage of corn in 1874 is equal to the decrease in that of cotton. Besides this there is an increase of over 58,000 acres in wheat; over 89,000 in oats, and more than 10,000 in sweet potatoes. There is also a large increase in stock of all kinds. But one thing is yet needful. There is no report of the acreage of grass and clover. Without these crops agriculture has no satisfactory basis. No complete system of home supply can exist without these. There can be no dairy; cheese and butter must be brought from elsewhere, and beef and mutton purchased. Clover and orchard grass, the best of the standard forage crops for the South, will thrive excellently in Georgia, while lucerne or alfalfa will produce abundantly, and in the mountains timothy will yield abundantly. The cultivation of these crops should be encouraged. It is to the credit of the Georgia Granges that the reform here noticed has been instituted and consummated. The resolution introduced a year ago at Macon has thus borne fruit. It is to be hoped that this judicious policy will be persevered in, and that fodder crops and stock breeding be added to the list of new industries. An increase of manufacturing can not occur until food is plentiful and cheap, and a dense agricultural population is available for help. Capitalists are tempted to invest, where a supply of labor is certain and steady. It is this diversified industry that makes a locality wealthy, and each industry helps the other. Where there are many artisans, there are good markets for farm produce, and

farmers thrive best where there are mills and factories. We commend this successful effort of the Georgia planters to those in others of the Southern States.

Hoop-Poles and Hoops.

There are thousands of acres of rough or rocky land, which might be profitably made to grow hoop-poles, if nothing else. Several years ago, in traveling through the hilly and mountainous northern part of England, the writer saw many hundreds of acres planted with willows, which were grown for the purpose of making spools for thread. Small matters of this kind are frequently more profitable than larger ones. An acre of hoop-poles is sooner grown than an acre of saw-logs, and there is as much money in the one as in the other. Sixty dollars' worth of hoop-poles have been taken from one acre of stony hill-side, which ten years before was a poor miserable pasture, and in five years more the sprouts will furnish another crop equal to the first in value. Many a field is now producing half a ton of hay per acre, and with no more, or even less, profit, yearly, than this previously useless hill-side.

Fig. 1.—CUTTING HOOP-POLES.

Fig. 2.—SPLITTING HOOP-POLES.

Hoop-poles are a staple crop in some districts, where the land is rough and where white oak and hickory thrives. There are many acres in the Western States interspersed amongst the rich prairies, as well as rough spots in the East, that might profitably be planted with these trees, if for no other object than hoop-poles. Sandy ridges and stony bluffs might be made to produce a crop of poles every four or five years, or indeed every year, by selecting each time those of proper size, and furnish shelter at the same time. The shelter furnished by numerous groves of small timber is no small item, in considering the value of these plantations. Their culture is of the simplest character. Upon rough ground the nuts may be dropped four feet apart, and covered by the hoe. This may be done in the spring; if the nuts have been kept in dry sand, or buried under sods safe from vermin; or in the fall when the nuts are ripe. The thicker they are planted, the better is the growth at first. But hoops require to be tough, and the trees should not stand closer than four feet apart, to have a proper and solid growth. When they are ready to be cut, which is when they are from 8 feet high and 1½ inch thick up to 14 or 16 feet high and 3 to 4 inches thick; they are simply cut off with a slanting blow of an axe or brush-hook about 6 inches from the ground, as shown in fig. 1. When cut at this hight, the stumps will sprout again and produce another crop. The winter is the season for cutting. The shorter poles will make firkin-hoops, and the larger ones will serve for hoops to barrels and hogsheads. The poles are trimmed of the branches and tied up in bundles of 100 each, or of 25 or 50 each of the larger ones. A box, similar to that shown in fig. 4, is used in binding the bundles. They are drawn together tightly with a rope at first, and then bound with a small withe or the slender top of a pole. Sometimes these poles are shipped to market

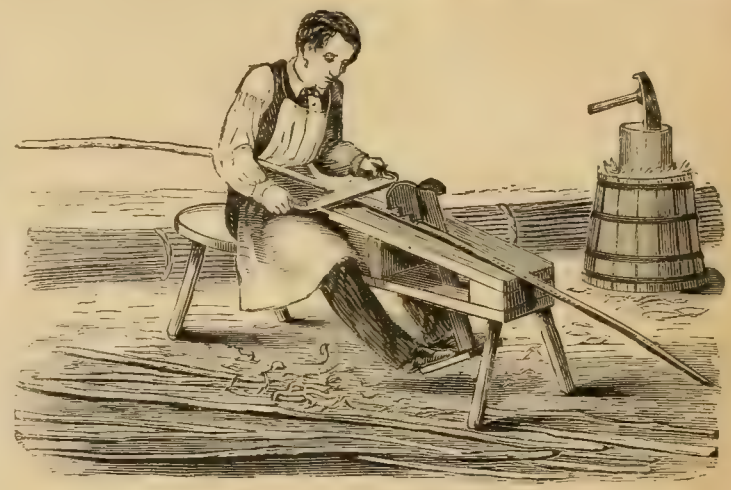


Fig. 3.—SHAVING THE HOOPS.

in this condition, when they are worth from 50 to 75 cents a hundred for the smaller ones, up to $3 a hundred for the largest. More frequently the poles are made into hoops upon the ground, and not only a great amount of waste is removed, but a more valuable article produced. The hoops are split carefully, commencing at the butts with the tool, as shown in fig. 2. The split halves are then shaved in the

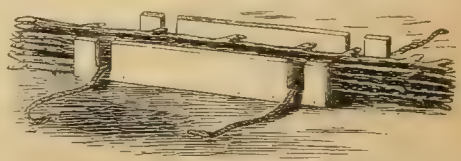


Fig. 4.—BOX FOR BUNDLING HOOPS.

manner shown in fig. 3, and tied up in bundles for sale. They are then worth much more than in the unfinished state. There is a regular demand for hoops at all the seaports, for shipment to foreign countries. Every vessel, which brings a cargo of sugar from Cuba or Brazil, takes out on her return a quantity of hoops, together with staves and heading, of which to make sugar hogsheads. Hickory and white oak make the best hoop-poles, and it is not proba-

Fig. 5.—A BUNDLE OF HOOPS.

ble that one who should plant a few acres of rough land with these, would lose his labor, even should he produce nothing but hoops, for this product has the merit of becoming salable earlier than almost any other planted tree crop.

Clearing Land by Blasting.

It may to many seem strange that we in America should be able to learn anything about clearing land from Great Britain, but recently some operations in clearing and improving land in the northern part of Scotland, have been performed in a manner that is instructive to us. The operations especially referred to are the breaking up and the removal of stumps, trees, large stones and rocks, by means of dynamite or giant powder. This explosive is a preparation of nitro-glycerine, rendered perfectly safe in use by admixture with absorbing and diluting substances, and is many times more effective than gunpowder. This pow-

erful explosive has been found to act in a most satisfactory manner, having greater effect, and exerting its force in a more favorable manner than gunpowder, and does not require any tamping. The rending force is so great, that the largest stumps are torn into fragments of convenient size for removal, or are lifted bodily out of their bed. One method of apply-

Fig. 1.—BLASTING WITH A SCREW-PLUG.

ing the explosive is shown in fig. 1 of the annexed illustrations, which we find in the London Agricultural Gazette. A hole is bored with a common auger into the center of a stump, and a charge of giant powder, in a cartridge already prepared to fit the hole, is inserted. An iron tapering screw, made to fit a winch, is then tightly screwed into the hole. The screw has a hole through its center, by which a fuse is carried to the charge. The charge is explod-

Fig. 2.—BLASTING WITHOUT BORING.

ed in the usual manner, and the stump is blown to pieces, or lifted out of its place. It may be well to caution those who undertake this work to exercise the greatest care, and to keep a good lookout for the screw, as it will sometimes be blown to a considerable distance if too large a charge is used. Greater useful effect is gained by moderate charges. Excessive charges do very poor execution, either blowing out the screw or a portion of the stump, and leaving the larger portion shattered, but still in a condition which makes their removal very difficult. Another method is shown at fig. 2. A hole is punched in the earth beneath the center of the stump, and between two of the largest roots. A cartridge of giant powder is placed at the bottom of the hole, with a fuse attached to it. It is stated that the powder, when it explodes, throws the stump completely from the ground in every case, and frequently splits it into several portions. With common blasting powder this can not be done. Its explosion is not sufficiently rapid, and the earth is simply removed from the stump. But with the many times more rapid and forcible explosion of the giant powder, the loose earth offers sufficient resistance, and the force of the explosion is exerted directly upwards, with the best effect upon the stump or rock. It matters not whether the object to be removed be a stump or a rock, the effect is the same.

The force of these nitro-glycerine preparations may be very economically used in breaking large rocks which need removal. Upon a recent occasion we saw a stone of about 16 tons weight, being nearly a cube of 6 feet diameter, shattered into fragments by a charge of one pound of giant powder simply placed upon the upper surface of the stone, and covered with a shovelful of earth. The stone was of very hard tough trap-rock, and would have required a day's work of two or three men to break it up with common powder. The powder is made and sold in prepared cartridges by the Giant Powder Co., of 61 Park Place, N. Y., who have prepared a circular giving full directions as to its use.

A Cold-Water Dressing for Spavin.

The application of cold water dressings with pressure by tight bandages, being often recommended for the treatment of these inflammatory affections of the hock-joint and legs of horses known as bog or blood-spavin and thorough-pin, it is very desirable to have an easy method of applying the water. This is usually done by means of wet bandages frequently changed and repeated, but this method is very inconvenient, troublesome, and ineffective. A much better plan has been brought into use by which a constant stream of cold water may be directed to the part. This consists of a metallic reservoir of water attached to the girth from which an india-rubber tube conveys the water to a perforated collar strapped around the joint.

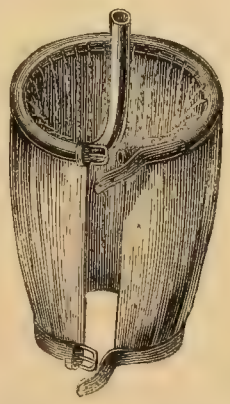


Fig. 2.—WATER BANDAGE.

A modification of this plan is illustrated in the engravings, which has some improvements that render it of easier and more general application. The metallic reservoir is replaced by an india-rubber water-bag, or in many cases a bladder may be substituted with equal effect. An india-rubber tube is connected with the water-bag and made to pass to the joint. The end of the tube is pierced with small holes, through which the water may slowly trickle. A cloth-bag is sown to this end of the tube, and straps or tapes attached, by which it is tied around the joint and retained there. The cloth is thus kept always wet, and a very effective water bandage is provided. The water-bag may be placed at either side of the horse, or upon its back, by fastening it to the girth or surcingle. The flow may be regulated by means of a metal tap, or what is safer, by a cord tied around and

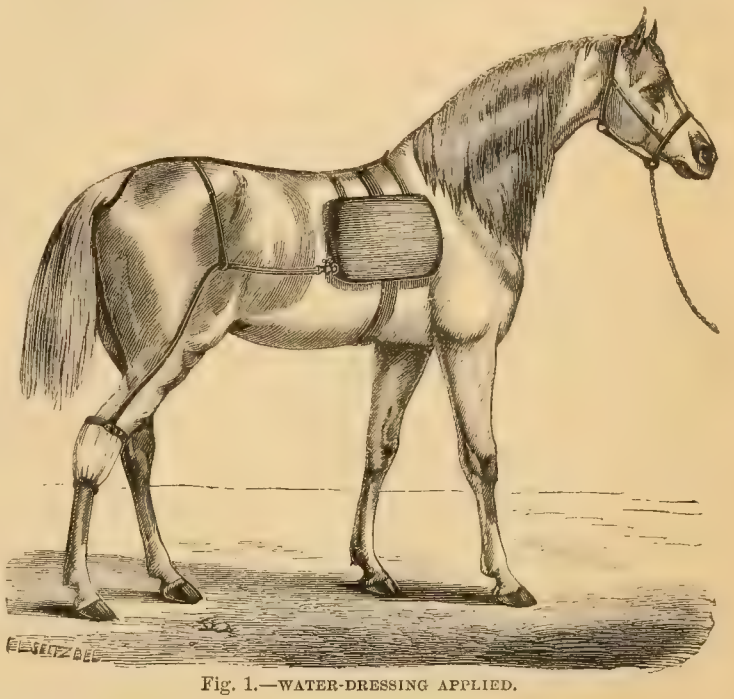
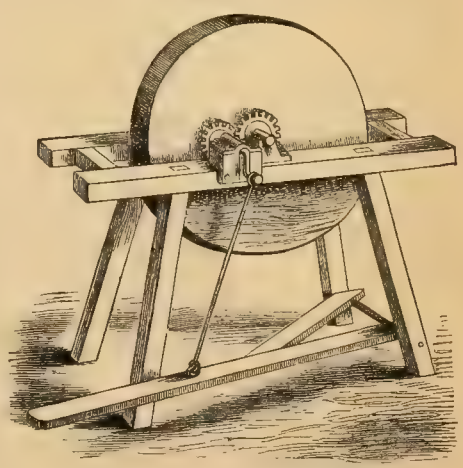


Fig. 1.—WATER-DRESSING APPLIED.

compressing the tube in such a manner that the flow will be so gradual that the bandage will be kept merely wet, but not enough so to drip. If it is desired to have the india-rubber in two parts, a small tin tube will serve as a coupling, the end of each piece of the india-rubber being drawn over an end of the tin tube. Fig. 1 shows the whole arrangement, and fig. 2 the portion of it which embraces the joint.

How to Hang a Grindstone.

It is difficult to keep a grindstone exactly round when hung and used in the ordinary manner. As the foot bears down upon the treadle, an extra pressure is also involuntarily made upon the tool, and the wear upon the stone is increased just at that moment. As the stone revolves, this pressure and wear occurs always at the same spot, and in a short



METHOD OF HANGING A GRINDSTONE.

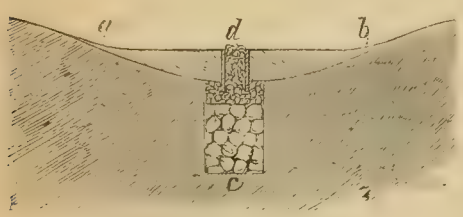
time a hollow is worn there, and by and by it is useless, until it is turned into proper shape again. Now, this defect is easily avoided by the use of two gear-wheels of slightly different

size, as shown in the illustration. One of these wheels should have one, or more, less teeth than the other, which changes the revolution of the stone and brings the involuntary increased pressure upon a different part of the stone each time, and equalizes the wear. If one wheel has 30 teeth, and the other 29, the stone will make either 29 or 30 revolutions before exactly the same spot will be subjected to the extra wear, and there will be 29 or 30 of these spots at regular distances around the stone, and in a stone of moderate size they will practically run together and leave the surface nearly uniform.

Draining Hollows.

Upon one occasion the writer was asked for advice as to the draining of a hollow in a cultivated field, from which no outlet could be made without a cutting of at least 10 feet in depth for a long distance. As the hollow was not over an acre in extent, the cost of this cutting made it impracticable. Yet something must be done, as the water, draining from ten acres, collected in this hollow, drowned the crop and allowed nothing to grow but immense smart-weed, which was an eye-sore and a nuisance. A plan was adopted with success, and afterwards the writer had occasion to follow the same plan for his own benefit with an equally satisfactory result. There are many places where similar hollows exist, which, by a few days' labor, may be drained and rendered useful.

The plan adopted is indicated in the accompanying illustration, which shows the shape of the depression somewhat exaggerated as to its proportionate depth. In the center of the hollow, as far as the dotted space extends, the surface soil was

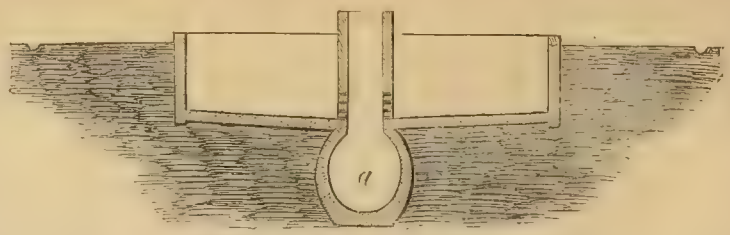


DRAINING HOLLOW BY A PIT.

removed and carted to each side, or to the spots marked *a* and *b*. The deep pit at *c* was then dug, and the earth thrown out was scattered over the bottom of the hollow, raising its level to the line *a*, *b*. The pit was dug down to a porous gravel stratum, and was then filled to within two feet of the top with large stones, finishing off with smaller stones and a layer of gravel. Upon the gravel the surface soil was then spread, except in the center, where a wooden curb two feet in diameter was placed, which was in connection with the stone below, and filled with stone up to the top. The stone was raised in a small pile a few inches above the surface, so as to avoid accidents by running over it with a plow or otherwise. The water which flowed into the hollow in the winter season, found a ready escape into the pit and away through the gravel, and gave no more trouble. The whole cost was a few days' labor at a season when such labor cost but little. There are many similar cases in which a like amount of labor at this season when there is little else to do, may be usefully expended.

An Italian Manure-Pit.

The accompanying illustration represents a manure-pit, constructed by an Italian gentleman of Brescia, a description of which is given in an Italian agricultural journal, L'Italia Agricola. It has some excellent points, which render it worthy the consideration of those who desire to make the most of their manure. It consists of a circular pit, about 6 feet deep and 24 feet in diameter, lined completely with cement concrete, or a bituminous rock, called *beton*. In the center there is a deep basin also of concrete, above which a circular well is carried up 2



SECTION OF ITALIAN MANURE-PIT.

feet above the level of the surface of the ground. Holes in the wall of this well serve to drain the manure-pit, and allow the liquid to collect in the basin below, from whence it can be pumped up for use. The floor of the pit slopes toward the center, to facilitate the drainage. The pit is surrounded by a space 3 yards wide, at the outer edge of which there is a gutter to collect what liquid may drain into it, and convey it into the pit. The whole space within the pit will hold over 200 cubic yards of manure when it is heaped to a level with the top of the well. This pit is substantial and convenient.

Horse Stables.

A horse's health and value greatly depend upon the kind of stable in which it is kept. A low roofed, close, ill ventilated stable, will cause disorders of the lungs or throat; the pungent odors of the manure in uncleaned stables, produce diseases of the eye and blindness. Improper lighting brings on near-sightedness, the sudden change from a dark stable to bright daylight, is very injurious to the eyes; while narrow stalls and low doors, may cause injuries to the legs, joints, or heads of the animals kept in them. Improperly built stables are often answerable for strains, sprains, spavins, bruised hips, and poll-evil, disorders which seriously reduce the value of our horse stock. No valuable horse should be kept in any other than a roomy, well ventilated, and light "loose box." In fact, it would pay to have such a box in which to keep an ordinary horse. A loose box should not be less than 12 feet long, and 10 feet wide; 12 feet square would be a better size. There should be nothing inside but bare smooth walls; not a cleat, or bar, or manger, hay-rack, or trough. The feed should be given in racks or mangers that swing back and forth from the outside to the inside, so that when the horse has taken his feed, they may be swung to the outside, leaving nothing projecting within. The windows should be large enough to give ample light, and overhead it should be either open without any floor above, or there should be a high ceiling with ample ventilating spaces just beneath it, to ensure pure air. These spaces should be small but numerous, and should be covered with fine wire gauze to break the entering current of air into a number of small streams, which would intermingle without making any sensible draft to fall upon the animal. The floor of the box should be slightly sloping towards the center, but only sufficient to permit of drainage to flow into a broad almost imperceptible hollow, along which it may be carried outwards. This is better than a covered drain which is never clean, and gives off an abundance of strong ammoniacal gas, which is injurious to the horse. An open channel can be cleaned with the greatest ease, and its being open, induces the attendant to keep it clean.

A stable is here illustrated, furnished with such boxes, that is suitable for a large farmer or a breeder of horses, or if reduced in size, it would serve the purpose of those who keep but one horse. It may be built of wood, stone, or brick. The first is the least durable, but in many cases is the cheapest. The stalls should be divided from each other by partitions of four inch scantling, covered with matched yellow pine boards. If these partitions and the spaces in the outer walls are filled with saw-dust, it will add much to the warmth of the building, and will prevent the passage of rats and mice. White spruce plank makes the best floor; it is harder than white pine, softer and not so smooth as yellow pine or oak, does not work

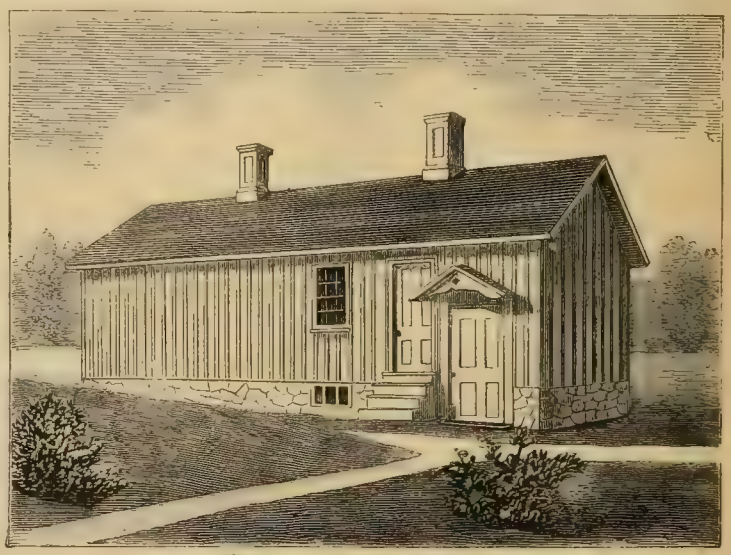


Fig. 1.—ELEVATION OF STABLE.

up into splinters as hemlock does, and wears sufficiently rough to give a horse safe footing. But in most cases a floor of clean sand, which can be removed and renewed when needed, is the safest, cleanest, and best in every way. It is grateful and "natural" to the feet; it cannot bruise nor injure the horse, gives the safest foothold, and is cleanly. Fig. 1 shows the

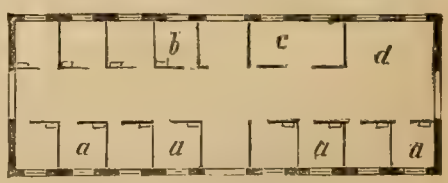


Fig. 2.—PLAN OF STABLE.

elevation of such a building as will accomodate 12 horses. Between the stalls is a wide passage, into which the feed boxes and hay racks may be swung when out of use. There is a room for feed, one for harness, and another for carriages. The feed may be prepared in the loft above, and dropped down a shoot or

spout, into the feed room. Fig. 2 shows the ground plan, in which *a*, *a*, *a*, are stalls; *b*, the feed room, *c*, the harness room, and *d*, the carriage room. Fig. 3 shows the interior. Along the walls of the passage are rings for tying horses, and the feed troughs are swung outwards in process of being filled. In this way the horses are fed from the outside, and by raising the upper half of the door, as seen in the engraving, a horse may be watered when necessary, without taking him outside.

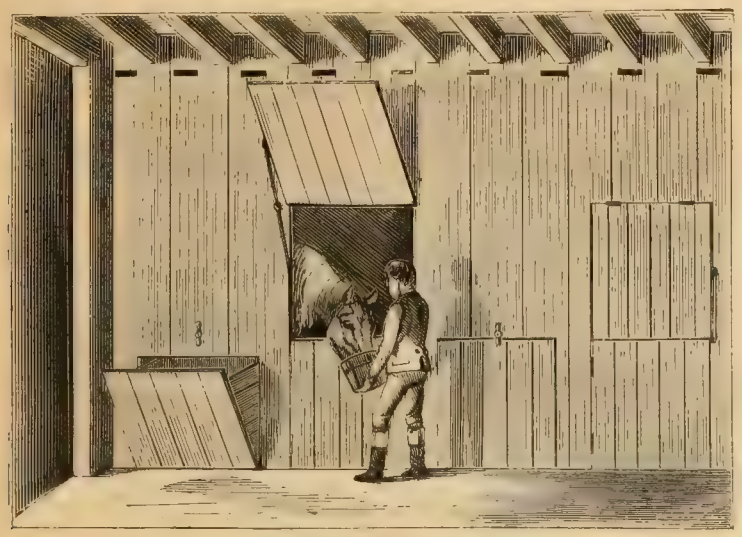
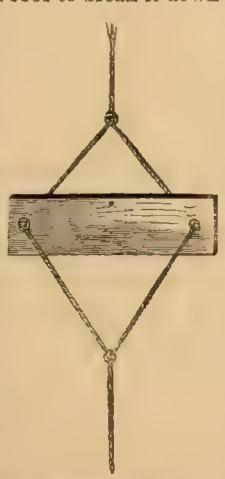


Fig. 3.—INTERIOR OF STABLE.

IN-AND-IN-BREEDING.—Although some of the most highly prized stock is the result of close breeding, yet it is doubtful if it is not already in process of degeneration from this very cause. The highly bred "Bates" animals now and then drop off by disease, or turn out "non-breeders." The "Booth" herd itself is said to be in a bad way from barrenness and disease. Sir Charles Knightley brought his herd to a "dead lock" through in-and-in-breeding, and another noted breeder produced animals which were blind or otherwise defective. If all these close-bred herds can only be restored by the use of "a cross" it would seem to show that the "cross" is a most potent influence for good, as it is used to obliterate the ill effects of a long course of mistakes.

To Clear a Roof of Snow.

In a heavy fall of snow, a sufficient quantity will collect upon a weak roof to break it down or force the rafters to spread and distort the shape of the building. Much damage occurs every winter by neglecting to clear roofs of snow immediately after a storm. A barn roof is not often accessible, nor is it safe or agreeable to stand upon the roof of a shed and shovel snow while a north-easter is blowing. We suggest the following plan of doing this work in a more comfortable fashion. A board 12 inches wide and 6 feet or less in length, is fastened to a long rope in the manner shown in the illustration. One end of the rope is thrown over the barn roof and held by a person on the rear side, who draws the board up on the roof until it reaches the peak. The person in front then draws the board down and scrapes the snow down with it. The board is then drawn up again, the person in front guiding it to the proper place with his end of the rope. The one in the rear steps along each time the board is drawn up a distance equal to its length, so as to bring the scraper in the proper position each time. To facilitate the drawing of the board up the roof, a short rope is temporarily fastened to its upper edge and to the long rope, by which it is made to lie flat as it is drawn up. The roofs should be cleared as soon as possible after each fall of snow.



ROOF-SCRAPER.

8 Water=9 Ice.—Important Now.

The general law that substances expand when heated, and shrink when cooled, is reversed in the case of water, and some other liquified bodies. Thus, water expands when heated, and shrinks when cooling at all temperatures above about 39° Fahrenheit, but the moment it sinks below 39°, it begins to expand, and the colder it grows, the more it expands. It does this so powerfully, that a single cubic inch of water, confined in a hollow globe of brass and frozen, burst it open with a force estimated at 27,720 pounds, or nearly 14 tons! The power of freezing water to rend rocks is well known. But for the exception referred to, the colder water and ice would be heavier, and sink to the bottom of ponds, lakes, and rivers, until a solid mass of ice would be formed that would not melt through all the summer heat. As it is, the water expands in changing to ice, and thus becoming lighter, it floats upon the surface, and even protects the water below from becoming frozen to much depth. In round numbers, water expands about one-eighth when it becomes very cold ice. Eight cubic feet of water, or *of earth saturated with water*, expands to nine cubic feet, when frozen. In this way the coarser soils are broken fine—disintegrated—during winter, and they are thus fitted for supporting and nourishing plants. Plowing, or otherwise breaking up and loosening soils in autumn, to let the frost deeper down, is thus highly beneficial.

But there is one result of great importance to every cultivator of any kind of plants, in field or garden, which are to stand in the ground over winter. The freezing and expansion of water-soaked soil breaks and tears whatever roots and rootlets are growing in it. But dry or merely moist soil expands very little. It will at once be seen that it is highly important, to draw off the water from every spot of saturated soil. Most fields of wheat, rye, clover, etc., contain same places, where the water settles so as to fill the soil. These should be seen to at once, and an outlet be made with the plow, spade, or hoe, for the standing water. Better destroy some of the plants to accomplish this, for those that remain will be far more vigorous and productive. The same with garden plants, with vines, fruit trees, etc. One long, steady freezing, with slow thawing, is seldom of great injury. The frequent freezings and thawings of early spring are most disastrous. Freeing the whole soil from water by draining will prevent this. Until this is done, have plenty of dead furrows, or other open drains, *and keep their outlets open all winter and spring.*

Fence and gate posts in *wet* soils are lifted out by the expanding earth, and do not settle back again. Stone-walls are displaced or thrown down, because, after being raised by frost, one side thaws out and settles sooner than the other. Fences running east and west are more disturbed than those running north and south, because the latter admit the warm sun's rays on both sides alike. But keep the standing water out of the soil around the posts, and under the walls, and there will not be expansion of soil enough to disturb their position. Open or blind drains will secure this. While this subject is fresh in mind, inspect the fields, gardens, vines, fruit trees, etc., and see what can be done NOW.

Mice vs. Fruit-trees—Look out for them.

The older readers of the *Agriculturist* will remember that nineteen years ago, that is the winter of 1855–56, there was an immense devastation of fruit-trees by the gnawing of mice. These pests seemed to abound like the frogs in ancient Egypt. They even destroyed gooseberry, currant, rose and other bushes, and cases came to our knowledge of whole fields stripped of grass as evenly as if cut off with a mower. In March and December 1856, we gave a theory for their prevalence which was generally approved. Mice multiply very rapidly. A single pair will soon stock a house with their progeny. The fall of 1855 was very dry, and winter closed in with no rain-fall, after which the ground was long covered with a deep snow mantle. The mice not only multiplied greatly in summer and autumn, but they were not killed off as in ordinary years by the freezing up of water soaked ground, and the snow afforded them ample protection under which they carried on their destructive work, doing damage to the amount of millions of dollars. The past autumn has been a similar one in most parts of the country, though rain probably filled the ground during November in some localities. The rain, however, fell upon frozen ground in many northern sections, and ran off over the surface, yet it doubtless drowned out many mice. It is well, therefore, to be on the careful watch, mice will travel miles even, under light snow, and no one knows whence an invasion may come. Where practicable, snow should be carefully tramped hard every time it falls or blows freshly around the trees. Curved pieces of tin, or tarred or roofing paper set around the trees is a help, though in 1855–56 they often barked the roots in light, dry soils. The little yoke-traps, costing 2 or 3 cents a hole, set freely, will kill them rapidly.

ROOTS FOR SHEEP.—It would be well to use caution in feeding roots to breeding ewes. A "belly-full" of turnips or mangels upon a cold wintry morning abstracts a large amount of heat from the animal. This results in decreasing the vitality and vigor of the ewe, and consequently injures the growing lamb. The loss is never regained. Consequently at lambing time, more especially when that comes early, a number of weakly or dead lambs are produced, and the ewes themselves are too much weakened to recover as quickly as they should do from the shock of yeaning. Experience has taught us to be cautious in the use of roots, especially of mangels or white turnips. Sugar beets, carrots, and rutabagas, which contain much sugar, are less injurious; but even these should be used with caution, and never without meal sprinkled upon them.

HEAVY HORSES IN THE WEST.—The popularity of the Percheron and Norman horses in the Western States, is rapidly increasing. As the Percherons become scarce, the Normans are largely substituted for them. At the late Illinois State Fair, 45 draft stallions were shown in one ring, and 38 in another, the majority being Normans. At the Chicago Exposition, Mr. M. W. Dunham exhibited 40

A SCOTCH DOUBLE-FURROW IRON PLOW.—*Drawn and Engraved for the American Agriculturist.*

Norman horses, 25 of them being his own property, of these he sold 15 for $33,150; one 4-year-old stallion having been sold for $3,150.

Double Furrow Plows.

The double furrow plow is an important labor-saving implement. Frequently, by its aid, two furrows can be turned with the same team and driver, that one could be with the ordinary plow. In no case is it necessary to use more than one extra horse. A three-horse team with one driver and a double furrow plow, will do the work of four horses and two drivers using single plows. The above engraving shows a three-horse team as it might have been seen plowing, the past season, at Beacon Stock Farm. The plow is one of Gray's double furrow iron plows, and weighs 500 lbs. Everything about it is of iron, and the wheels serve to guide the plow, steady the draft, and facilitate turning at the headlands. One of the wheels travels in the last furrow made, snugly up against the land, and thus compels the plow to take an exact course, and in fact gauges the next furrows. The plow travels steadily, needing no touch of the driver's hands except when going about at the headlands, and turns a most perfect furrow, seven inches deep, and nine inches wide, or wider and deeper, or otherwise, as desired. There can be no crooked furrows, no baulks, and no ground unturned, and if the first back furrow is laid out properly, the whole field will be perfectly well plowed. In Mr. Crozier's plan of starting the furrows in stubble land, there is no strip of unplowed land left beneath the back furrow, as is usually done, nor is there a ridge left to show the back furrow. He first plows a furrow perfectly straight, by the use of the marking stakes. The plow is then run beneath this furrow-slice, which is turned back into its former place, with the earth which was beneath it now above it, and both together froming a ridge of perfectly mellow earth, as deep as the rest of the plowed ground will be. The other furrows are then turned each way towards this one, leaving the "land" without any ridge in the center of it, and every portion of it perfectly well plowed. This is a small thing comparatively, but one well worth remembering and practicing. This plow is made near Glasgow, Scotland, and was imported by Mr. Crozier, at a cost of about $100. Being entirely of iron, it is almost indestructible, and although its weight is considerable, yet its draft is very light; three horses working it with ease, and plowing two acres in nine hours. The American plowman, however, would rather ride with his plow than walk behind it, and to suit his inclinations, a variety of double plows and gang plows with a seat for the driver, are made both at the East and the West. The lands at the West are peculiarly fitted for the use of these double and gang plows, which are made for breaking prairie and plowing sod or stubble. Gangs of four or five plows are in use in the easily turned soils of California, and double furrow plows at least, would be found of great utility upon prairie farms. The prime necessity for Western farmers, is cheaper production, and a plow that will turn two to four acres a day, or do double the work of a common plow, with but one additional horse, will reduce the cost of plowing almost one-half. One of the best of our double furrow plows that we have seen, is illustrated on page 12. This has some very good points. It is made so that the draft is directly from the axle. There is no crank in the axle, but one of the wheels being made to run upon the top of the last furrow, the plow is kept level, and the bottoms of the furrows are perfectly even. The plow is light, of light draft, and is made for plowing sod or stubble. It is made by Carr & Hobson, 56 Beekman street, New York.

The Hyssop-Leaved Cuphea.

Probably no greenhouse plant is better known and more popular than *Cuphea platycentra*, which, under the odd but somewhat descriptive names of "Cigar-plant" and "Fire-cracker plant," is often cultivated in the window, as a center to hanging baskets, and as a bedding plant. Its small, tubular, scarlet flowers, tipped with violet and white, suggestive of its common names, are not more valued than the neat, clean foliage. We here figure a new species, which promises in some respects to rival the old favorite—Hyssop-leaved Cuphea, (*Cuphea hyssopifolia*,) which is also a native of Mexico. In speaking of the plant as new, we mean new to commerce, if not to cultivation, as the recent English and French lists do not include it. It, like many other of our cultivated plants, was discovered by Humboldt and Bonpland, and was described over half a century ago, but we had never seen it, until we received a specimen from Hoopes Brother & Thomas, of Westchester, Pa. The plant, which had evidently been growing in the open ground, was potted for the greenhouse, where it has kept on growing and blooming as if it had never been disturbed. This plant much resembles the well known one, being of a very branching habit, and forming a dense bushy shrub, which may be cut into any desirable shape. The engraving shows a small branch of the natural size. The leaves, not quite half an inch long, are of a dark bright green; the flowers have a short tube with a spreading border, and are not much in external appearance, like those of the Cigar-plant; their color is lilac, and they are produced in the greatest profusion. The plant flowers continuously, and an exceedingly neat object it is; its general expression is exceedingly neat and modest, and no matter how full of flowers it may be, it is not obtrusively showy. It would be worth growing for its foliage alone, as it is of a delicate character to work up admirably in bouquets; and in bedding arrangements it would be most useful in contrast with more showy plants. It is propagated with the same ease as the old species, every little snip making a plant. We believe it is the intention of the firm who sent it to us to soon offer it for sale.

HYSSOP-LEAVED CUPHEA.—(*Cuphea hyssopifolia.*)

NATIVE CANNA.—(*Canna flaccida.*)

Our Native Canna.

The Cannas, now so deservedly popular in garden ornamentation, are all exotics from the East and West Indies, and South America, the most prized among them being the results of hybridizing and crossing among the species. The best known of these, *Canna Indica*, is so thoroughly naturalized in Louisiana and other parts of the South, that many have supposed it to be indigenous; we have but one native Canna, *C. flaccida*, which is found from South Carolina to Florida in swamps near the coast. It is often much easier to get a Japanese or Himalayan plant than it is one from a remote part of our own country, and our attempts to get this Canna were an illustration of this fact, and it was only last spring that we were able to secure it. This Canna is in Paxton's Botanical Dictionary as having been introduced into England in 1788, but it is recorded as having *red* flowers, hence we infer that they have got hold of the wrong plant. Our species is from two to four feet high, with a stout, very leafy stem; the leaves are ovate-lanceolate, pointed, rather erect, and of a pleasing glaucous green. The spike is few-flowered, but the flowers are much larger than in any exotic species, or variety, that we have seen, and of a very different appearance. The three outer divisions of the corolla are long, narrow, and bent downwards, the three inner ones very broad, thin, and wavy; the delicate texture of these divisions and their peculiar waved or crimped margins give a pleasing appearance to the flower, and one that is exceedingly difficult to reproduce in an engraving; the flowers are three to four inches long, and of the most delicate lemon-yellow, open at evening, lasting in perfection only about a day. Though the finest named varieties, with their tall stems and brilliant flowers, were growing in all their stateliness near at hand, this little native of the Florida swamps gave us more pleasure last summer than all the rest. Like some other Cannas, this has a long, comparatively thin root-stock, and on this account will require more care in keeping during winter than those which form a large thick tuber; this, if dried off like the others, would be quite likely to shrivel up and lose its vitality, a trouble which may be obviated by keeping the roots in a dry cellar covered with dry sand, or they may be potted and kept in a cool greenhouse at rest during the winter.

Is the Fruit Changed by Foreign Pollen?

BY PROF. ASA GRAY.

At this season, when apples of different variety from the tree that bore them, or of two sorts on different sides of the same apple, are brought in, it is natural that the discussion of the cause and origin of such freaks should revive, and run the customary rounds of the papers. You ask whether there is any new evidence that pollen may act immediately on the fruit of the fertilized flower so as to impart to it, as well as to the resulting embryo, its own specific character. In reply, I would say that the only recent contribution I know of that really throws any more light upon this curious subject, is an experiment by Maximowicz, a Russian botanist. He crossed two Lilies, which differ more in the form of their pods than in anything else, (the common bulbiferous Lily and *Lilium Davuricum*), and the wavy pod of the one developed directly into a pod of the shape of the other. This change of shape, so caused, seems to me even more extraordinary than the change of quality or texture, such as takes place in squashes and melons. I should think that the fact of such action of pollen, wholly improbable, as it seemed to be, particularly to scientific men, is now pretty well established. But what rather surprised me, on looking up the subject, was, that all this had been made out very long ago. This ought not to excite surpise, for our ancestors were quite as sharp-sighted as we are, and if this kind of thing occurs now-a-days, it must have occurred in former days as well. It is said that Theophrastus and Pliny allude to it, but I cannot look up that matter now. In the case of apples, good old Peter Collinson, the correspondent of Franklin and John Bartram and Linnæus, brought some to the notice of the Royal Society in 1745, and there is a communication in the Philosophical Transactions of that year "concerning the effect which the farina of the blossoms of the different sorts of apple trees had on the fruit of a neighboring tree." Mr. Cook, the author of the communication, "sent to Mr. Peter Collinson some Russetings, changed by the farina of a next neighbor, whose name he wanted skill to know, but could only say, that the Russeting had acquired his face and complexion. Mr. Collinson then produced several samples of the apples, an untainted Russeting, a Russeting changed in complexion which grew among a great cluster of unaltered brethren, and some apples of the other tree which had caused the change in the Russetings, and whose fruit had in return received a rough coat from the Russetings."

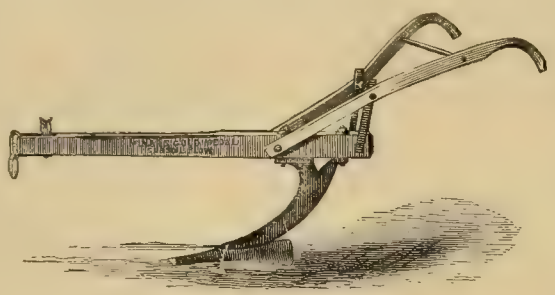
It is curious to notice that, when this subject came up in England fifty years ago, illustrated by new cases, both in fruits and the coats of seeds, (such as pears), Mr. Knight, the prince of vegetable physiologists of his day, took against the idea that the pollen had anything to do with it. As the upshot of his own observations in making "some thousand" experiments with pollen, in which he found no such changes, he concluded: "I therefore conceive myself fully qualified to decide that in the deviations of the fruits mentioned from their ordinary character, the operation of the pollen of another variety was not the disturbing cause." Soon after he took the same ground in respect to the coat of seeds. Nevertheless sufficient positive testimony has in both cases overborne the negative, but there is no indication that Knight was ever convinced by it. At the start he was prepossessed by another theory. He had already published an account of a branch of a yellow Magnum Bonum Plum that bore red fruit; but, though it did this only for a single season, bearing yellow plums the next year, Knight still clung to the view he was committed to, i. e. that it was a case of "bud variation." There is something curious in the case of these apples of two sorts. In a strongly marked case which I examined, a Spitzenberg apple was russet on one side. The flower, of course, had five stigmas. If two or three of these were acted upon by foreign pollen, and the others by their own pollen, the strongly-marked difference of coloration should have divided the apple unequally, one would think. But exactly one-half was red and unchanged Spitzenberg, and the other Russet. I believe this is often the case.

It has lately been attempted to explain such apples on the principle of reversion. This has been suggested as a more probable cause than the action of pollen. But that assumes that the Russet has Spitzenberg blood in it, or vice-versa, which is gratuitous and most unlikely. The other explanation assumes nothing except what is known to take place in strictly parallel cases.

Subsoiling in Market Gardens.

BY PETER HENDERSON.

In all our grounds devoted to market gardening, I made it an unvarying rule every alternate year, to let the subsoil plow follow in the wake of the surface plow, thus stirring up the soil on an average 18 inches deep. Common as is the use of the subsoil plow, yet, no doubt, thousands of your readers have never seen one in use, and may have vague notions of its manner of working, many supposing that it turns up or turns over the subsoil. By looking at the implement, it will be seen that it is simply a shoe fitted to a strong shaft about 16 inches in length, this is entered in the furrow made by the common plow, as deep as possible,



SUBSOIL PLOW.

usually down to the beam. In stiff soils, the subsoil is often clay, and it requires a pair of heavy oxen or horses for the work, if the subsoil is strong, oxen are preferable to horses. The longer our practice in working the soil, the more important do we find this much neglected operation of subsoiling. Often large sums are spent in laying drains that in a few years become inoperative for want of subsoiling. All my grounds here are overlaying a blue clay subsoil, and are drained with tiles, 20 feet apart, and from 3 to 4 feet deep. Yet without the use of the subsoil plow, to stir this compact subsoil of clay, so as to allow the water to pass through it freely, the drains would not have half their value. We took advantage of the past fine dry fall, and gave all our vacant grounds a thorough plowing, following with the subsoiler, so that they were stirred to at least 20 inches deep. A few days after finishing, we had twelve hours of continuous rain, which was quickly absorbed by the deeply stirred soil, and taken off by the drains; but on looking at a part of one field, I observed that nearly a third of it was covered with pools of water in the tracks left by horses' feet, and on searching for the cause, found out that something about the subsoil plow had broken, and the work was finished up by the common plow only—stirring 8 inches deep, instead of 20. In consequence the water lodged on the compacted upper stratum of the subsoil, where it would take days to find its way down to the drains. The great trouble with most farmers and gardeners, is that the use of the subsoil plow necessitates an extra team, a convenience that it is often impossible to hire, and in consequence many who are well aware of its importance, have to do without using it. But where neighbors are near, it would be a mutual advantage to exchange the use of teams, rather than to do without the benefits of the subsoiler. Where furrows are long, the same team may work both the surface and subsoil plows, by losing a minute or two to unhitch and hitch. I am so convinced of the value of this deep stirring of the soil, that I believe if in all heavy, deep lands, the use of the subsoil plow could be made universal, stirring down to the depth of 18 or 20 inches, twenty per cent would be added to the value of the crop throughout the entire cultivated area. If on drained land, the use of the subsoil plow is advantageous, it is even more so on land that is not drained, the point in either case, being to break or stir the compacted subsoil as deeply as possible, so that water will pass off rapidly, and at the same time make a medium in which the roots of plants will strike deep, thus sustaining the crops in dry weather, which would be destroyed or injured by shallow plowing.

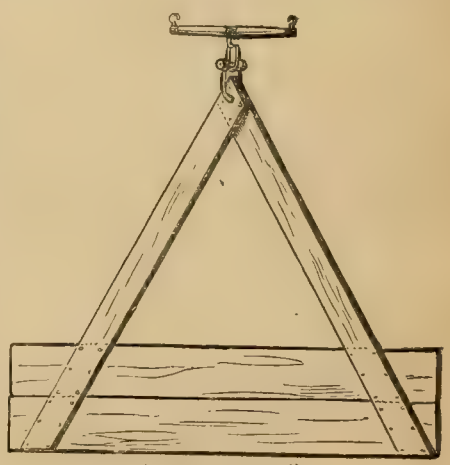
Some New Uses of Old Tools.

BY J. B. ROOT, ROCKFORD, ILL.

I have tested new patented implements for tilling the soil, as they have been introduced, and I have found many of them valuable, yet I have been most pleased with some *new uses* for the old ones, and some home-made ones, which must certainly commend themselves, as they involve little or no expense, and can be tried on a small scale, until their utility is established.

The Harrow,

besides being an excellent tool for fining the soil, and fitting it for the crop, is equally good for tilling it. With no other implement can we so cheaply and quickly kill the weeds, if we only begin in time. Long before we heard of the Thomas Smoothing Harrow, (which is indeed an excellent implement,) I could from my own fields see at least a dozen farmers at once, off on the rolling prairies, working their corn with the common square harrow, drawn diagonally. In planting large breadths, the weed seeds in that first planted are sprouted by the time the last is finished, so that our usual method has been to plant the seed at least two inches deep, and as soon as the teams are through planting, to hitch them to the harrows, and begin working the first portions, hills and all, and continue this, until the rows can be easily followed. The many teeth of the harrow destroy the newly germinated weed-plants as thoroughly in the hill as in the row, while the deeply rooted corn-sprout, from its spindle shape, slips to one side or the other of the teeth, and is not only not injured, but is greatly benefited by the breaking of the crust, and the loosening and aërating of the soil. In this way the crop is kept clean, until it is so large that the cultivator can with safety throw soil into the hill, and keep the crop free from weeds, until it is laid aside. In



"THE PLANKER."

fact, the harrow is quite as important to the corn crop, as is the cultivator, and the secret of large crops yearly on the same land in the West, lies quite as much in the early and constant tillage with one or the other of these implements, as in fertility of the soil. In like manner the harrow is put upon the potato crop soon after planting, and again just as it is coming up, so that the crop is

clean, until the double shovel-plow gets into it, and begins hilling. It is only occasionally that a sprout is broken off, and that soon throws up a new shoot. In fact, upon any deep-rooting crop, the number of injured plants is much less than would be supposed. Accidentally I learned to use the harrow broadcast even on melons, cucumbers, and other vines. Having set a green Scandinavian to harrowing between the rows of melons, after a driving shower had formed a crust, I was surprised upon my return to him an hour later, to find him working the hills as well as the spaces. But while hurrying over the field to speak to him, I could find but rarely a plant injured, and in consequence allowed him to continue. Since then I have some seasons harrowed as much as fifty acres of vines in this way, and found that upon deep plantings, just as the seed is sprouting, it is quite as beneficial as to corn; it cleans the crops, loosens the surface, saves expense in tillage, and does not injure the stand on a crop, in which seed was planted freely. This looks to be a radical method, and no one should try it largely at first, however well it may succeed with me. I mention it in hopes it may suggest some other crops, upon which it may be found profitable to use this good old implement.

Harrow-toothed Cultivator.

The harrow-toothed, spreading cultivator, as described by Henderson, is an excellent similar implement, cheap, and always desirable for shallow tillage, while plants and weeds are small. It is greatly improved in its "grip," if the points of the teeth be flattened, and bent forward.

For tillage purposes the best-sized harrow teeth are 9½ inches long and ⅝ square, projecting 4½ inches below and 2½ above the frame. When set this depth, the back of the harrow, especially on land full of trash and long manure, or very lumpy, is often quite as serviceable, as the front or points. But for lumpy lands, and for smoothing all soils after the harrow, for fine seeds, or even field crops, one of the most serviceable and inexpensive tools is

"The Planker,"

as we call it, for want of a better name, it being lighter and cheaper than the clod-crusher. For one horse it is made eight feet long, and for two it is twelve to sixteen. It consists of two heavy planks, side by side, fastened together by six-inch boards, nailed on as cleats at an angle of 45 degrees, so that they meet in front of the center. At this point they are firmly nailed or bolted together, and a hole made for the clevis, by which the horse is attached. The line of draft elevates the front edge of this, so that it glides upon the lumps, and the rolling motion given them, together with the weight of the driver, who stands on the back edge, thoroughly fines the soil, and leaves a compact, smooth surface, in excellent condition to receive the garden drill. On our Western soil, free from large stones, by the use of this we have little occasion for a rake, even for our finest garden crops, except in spots where manure or trash have gathered. If one working of the soil is not sufficient, we again harrow and "plank."

Upon corn and other tilled field crops, it leaves the ground in excellent condition, to receive the most benefit from the use of the harrow, or any tillage implement, and to show very plainly the traces of the marker. Total cost, 40 to 60 cents.

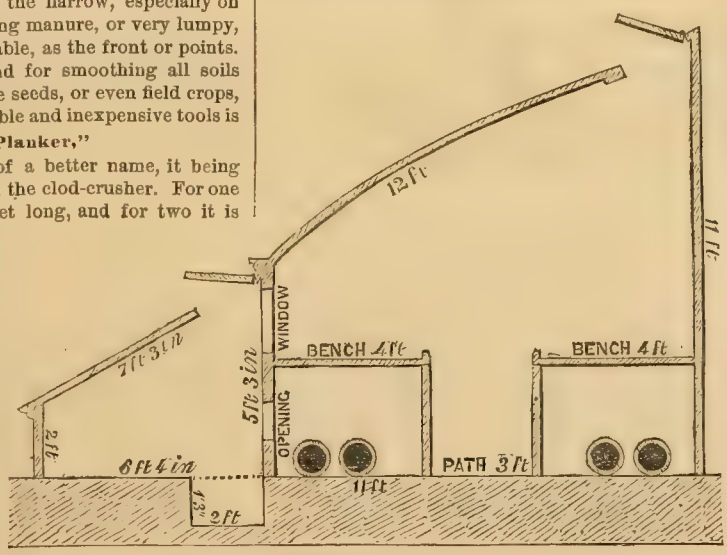
The Cultivator Shield.

When working close to hills or plants, a sheet-iron shield, attached to the cultivator, is a most admirable help. This is made 4 to 6 inches wide and 15 inches long, with rounding lower front edge, and by an iron staff is bolted to the side of the beam, running nearest to the row, and by it can be raised or lowered. If no soil is to be thrown to the plants, it is let down to the ground, if little or considerable is to be thrown under the plants, the shield is raised in proportion. By the help of this we can run, without danger of injury, very close to even small garden drill plants, like mangels, rutabagas, carrots, etc. We use it most largely with the common double-shovel corn-plow of the West, (by the way one of the most serviceable tools untrammeled by patents,) but it can easily be adapted to any cultivator.

None of these implemente are patented, and if used with a little ingenuity, will answer in better stead than many expensive patented implements, as I have learned to my cost.

Notes from the Pines.

Autumn rains have been such a matter of course, that we have not appreciated their importance, but I think that in no summer's drouth have I ever so earnestly wished for rain, as in the dry days of October and November, just passed. Upon November, 23d, we had the first important rain for months. The old saying, that "winter will not set in until the swamps are filled," recognises a fact that we had seriously impressed upon us in the winter of 1872-73, that plants suffer as much from a dry winter, as from an excessively cold one. A nurseryman in Georgia, who sent me a few trees, wrote that the ground was so dry, that he could only get the plants up by the use of a pick and by watering. And so it seems to have been all over the country, and unless we have abundant rain before winter sets in, our evergreen growers will have a sorry story to tell next spring....It may be regarded as one of the certainties in horticulture,



SECTION OF GREENHOUSE AND EXTENSION.

that no greenhouse is ever large enough, that is, an amateur's greenhouse. I find it so myself, and I judge from the number of friends who complain of having more plants than they can make room for, that the experience is general. It is easy to accumulate plants, but

Enlarging a Greenhouse,

is a matter which often presents other difficulties besides that of paying the bills. If one's house, as is the case with mine, was built to fit a particular place, it is difficult to enlarge it. The house is a wide lean-to, with a curvilinear roof. It is 11 feet wide, and the front to the eaves trough, is 5 feet 3 inches high. The only possible way to get more room, was to extend in front. This has been done, and I am so well pleased with the result, that I give a diagram, thinking that it may be of use to others who would like to enlarge in a similar manner. The main house, with its two benches, is shown in section at the right of the plan. The addition is about 6 feet wide on the ground. Its front wall, at the extreme left of the diagram, is 18 inches high, from this starts the roof, and meets the other house directly under the eaves trough. The roof is fixed, but has four ventilators of three panes each, arranged to lift from within. In order to gain head room, the path, 2 feet wide, is excavated, and the bench consists of the unmoved earth, planked up in front, and then cemented over the surface. The roof of this addition has a water conductor, and is furnished with a set of light shutters, which may be put on when the weather is unusually severe. In the front wall of the main house, and opposite the water pipes, are four openings, 12×18 inches, closed by sliding shutters. By opening these, and by lifting the front sashes of the main house, heat may be let into the addition whenever necessary, I have not tried it, but I think my heating apparatus is sufficient to heat both houses, if desired. It is very difficult to keep a varied collection in a single house; even if we omit the proper stove plants, the temperature required for the blooming of most greenhouse plants, is greater than is needed by many things, and did it not give me over one half more room, I should value the addition as furnishing a cool house for roses, azaleas, ferns, and other plants. It is a great comfort to have a thing done just as you want it, and I will give Mr. Hand, of Jersey City, the credit of having made an excellent job. I only made a rough sketch upon paper, detailing exactly what was to be done, and did not bother myself any more about it....I wonder if the

Japan Quince, or Pyrus Japonica,

fruited as freely everywhere as it did with me. Even small bushes were fairly loaded with the fruit. This quince has a very pleasant fragrance, and this has been regarded as the sum of its good qualities, but a friend showed me a sample of jelly made from it, which was handsome to the eye and pleasant to the taste, saving that the acid was exceedingly sharp.

The Cultivation of Native Plants

has for some years been a hobby of mine, and I have several times alluded to it in these "Notes." The collection has increased to such an extent that, while I do not neglect the exotics, I find the territory devoted to the native Americans each year extending its borders. To meet the requirements of certain species that are fastidious about their locality, we have made a new rock-work for the mountaineers, and by the aid of peat have prepared a ground for the "bog-trotters," and now the only lack is a pond for aquatics, which must be accomplished somehow, though I do not yet see my way to that. One pleasant thing about the matter is that my mention of bringing native plants into the garden has brought out the fact that there are a number of others, in different parts of the country, who are engaged in the same thing, and "The Pines" received contributions from these, for which it returned an equivalent, and is ready to reciprocate similar favors from all lovers of native plants.

The Mystic Apple.

BY WILLIAM CLIFT.

This beautiful fall apple, illustrated in our present issue, originated in the Mystic Valley, and very appropriately bears its name. It was taken as a seedling from the farm of Alden Fish, about the year 1837, and was planted in the garden now occupied by Asa Fish, by James D. Fish, now of New York. The tree, though a vigorous grower, was rather late in coming into bearing, and did not yield much fruit until 1856. Since then it has borne large crops in the even years, with few or none in the odd years. It had 30 bushels this year.

The illustration is from a specimen of medium size. The fruit is medium to full medium, oblong, regular; surface smooth, shaded red on yellow, with irregular and broken stripes of red; russet dots distinct; basin medium, regular or slightly plaited; eye long, small, and closed; cavity acute, regular; stem long, and slender; core, large, regular, oval, closed, clasping; seeds numerous, plump, brown; flesh, white, slightly suffused with red near the core in some specimens, fine grained, tender and juicy; flavor, sub-acid, sprightly, and refreshing; quality best; use, dessert, kitchen, mar-

ket; season, October and November. This apple is highly approved by the pomologists who have seen and tested it. It is not in the hands of any nurseryman, and has never been sent out.—[Our associate sent us some specimens of the Mystic Apple at the time he sent his article, and while we had every confidence in his accuracy in such matters, we felt reluctant to add to the already too extended catalogue of apples, if there was the least chance of this being already known to pomologists, and suggested that this be sent to Mr. Downing. Although the fruit was past its best condition, specimens were sent to Mr. D., with the suggestion that it might be one of the apples called Fall Pearmain. Mr. D. writes: "It is no Fall Pearmain that I am acquainted with, neither do I recognize it as any apple that I have ever before seen."—This, with the very direct history of the tree given above, would seem to be conclusive evidence that the Mystic may claim to be regarded as a new, and we may add, an excellent variety.—ED.]

THE KUM-QUAT.—(*Citrus Japonica.*)

The Kum-Quat.

The recent fruiting of the Kum-Quat in England has awakened a new interest in the fruit, and it is figured in the Gardener's Chronicle, and the Florist and Pomologist. The Kum-Quat is a small species of orange, *Citrus Japonica*, which is found in both Japan and China; it was figured and described in the last century by Thunberg, but it was not known in cultivation until 1842, when Mr. Fortune introduced it into England, and it was cultivated at Chiswick. Later it has been successfully fruited, and is likely to become a popular plant. In China the Kum-Quat is grown as a shrub about 6 feet high, but trained to the back wall of a greenhouse, it has in England reached the hight of 15 feet. The plant resembles a dwarf orange tree, but with smaller and thinner leaves; it flowers very freely, and is very attractive in bloom; the fruit, which is about the size of a gooseberry, is like an orange in miniature, having a bright orange rind, which, when scraped, gives off a highly agreeable perfume. Within there are five cells, filled with an exceedingly acid pulp. The fruit, picked with its leaves attached, makes a beautiful ornament for the dessert, and when preserved with sugar, forms a sweetmeat which is highly esteemed. According to Mr. Fortune the Kum-Quat grows in the greatest perfection in a portion of China, so cold that the orange will not thrive, and that in the orange-region of southern China the Kum-Quat does not succeed. The Chinese grow it in pots, but it does better in the open ground. The plant requires a warm summer to ripen its wood, and a dry winter, and it would no doubt prove hardy in many localities in our Middle States, as in China it endures a cold of below 20°. It being an ornamental plant in both flower and fruit, and useful as well, it is hoped that our nurserymen will introduce it; we think there are some plants in private hands, but it is not yet in the trade. The Kum-Quat will not graft upon the orange; the proper stock is *Citrus trifoliata*, a small hardy species, which propagates from cuttings.

THE MYSTIC APPLE.

Ornamental Peach Trees.

It is not long ago that the double-flowered peach was the only ornamental variety offered by nurserymen, but now there are several which are worthy of attention. The rapid growth of the peach, makes the ornamental kinds valuable for new places, where an immediate effect is desired, and as they are easily multiplied by budding upon common stocks, an old tree can be cut out without regret, when it becomes so large as to be in the way of more permanent trees. Of the double sorts of large growth, there are now several, the common, with the ordinary rose-colored flowers, the white, like a little camellia, and the crimson. Besides these there is the Carnation-flowered, with striped petals, and the Various-flowered (*versicola*), which has white, red, and variegated blossoms all intermingled upon the same tree. The weeping peach, which, among other trees, serves to perpetuate the memory of good William Ried, is a striking form, with pendulous or "weeping" branches. Quite the opposite of this, is the Pyramidal Peach, which originated in the nurseries of P. J. Berckmans, Augusta, Ga., who, by the way, has the greatest variety of ornamental forms of the peach, that we have seen anywhere. In this every branch takes an upright direction, and gives the tree much the appearance of a Lombardy poplar. Though this remarkable form originated in a Southern State, it passed the winter upon our place near New York City, without losing a bud—a most striking variety. The Purple-leaved Peach has been written up and down by various writers. For two months or more in spring and early summer, its foliage is of a rich purple color. As the growth is completed, and the leaves begin to ripen, they then turn green. Still we regard it as a useful variety. Our specimen bore quite a crop of worthless fruit. The dwarf varieties, the Italian and Van Buren's, have been so much advertised, that they should be well known; it is of little use to recommend these for fruit. They are interesting on account of their very dwarf habit, but if they bear any fruit, it is to be regarded as more ornamental than useful. The most remarkable dwarf peach trees we have ever seen, were at Mr. Berckmans', raised from seed from Australia, they are so dwarf, that the others known as dwarfs, are giants beside them; they are double flowered, and are said to bear good fruit in Australia. A horticultural friend in France, sends us some stones of a new variety, now attracting much attention there, the Yellow-barked Peach, (*Pêcher à écorce jaune*) which is very ornamental in winter, on account of the rich yellow color of its bark. It bears a good, late, freestone fruit, and reproduces itself true from the seed—a rather unusual thing with variegated trees. The Flat Peach, the Peen-to of the Chinese, which has its fruit so flattened, that it is much broader than long, will probably not succeed in the open air in this country, as it blooms so early that its flowers are injured by frost, even in Georgia. For those who grow fruit under glass, this variety is of great interest. The neglect with which fruiting peach trees are treated, seems to fall to the lot of the ornamental varieties, and we rarely see a double flowered tree that has not a sprawling head. If they were properly pruned, by shortening in the branches by at least a third, their appearance while in flower, and during the long period they are out of flower, would be greatly improved.

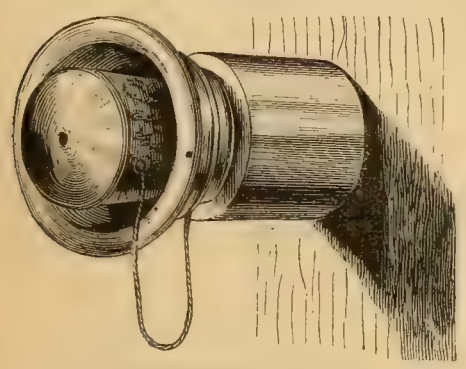
SECTION OF MYSTIC APPLE.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

A Speaking-Tube Call.

Most modern houses are furnished with speaking-tubes, by means of which communication is had between different stories. In a large house they are of great use, as they save many steps, and in shops and manufactories of much size they are generally adopted, the cost being as nothing compared with their convenience. The mouth-piece is usually arranged with a whistle, to call attention; the person called turns the whistle out of the way, and puts his or her ear to the tube to listen to the message, and when the tube is left, the whistle springs back to its place. A tube of this kind runs from the ground floor of our office to the printers' room in the 6th story, and being in very frequent use, there has been much annoyance caused by the whistling mouth-pieces, which would get so out of order that they needed frequent renewal or repair. One of our associates, being out of patience with the complicated contrivance of springs and handles, substituted for it a very simple one, which is shown in the engraving. It is only a large cork with a



SPEAKING-TUBE WHISTLE.

hole through it, and at the larger end a toy tin-whistle is cemented; this is made fast by a string, so that it may not get misplaced. When the whistle gives a call, the one who answers takes out the cork, hears and replies, and then replaces it. The whole affair cost 2 cents, and has already been in use longer than one or two of the dollar ones would have lasted.

Uses for Old Fruit Cans.

Canned fruits and vegetables are now put up on the large scale at such cheap rates, that many families prefer to purchase such articles to putting

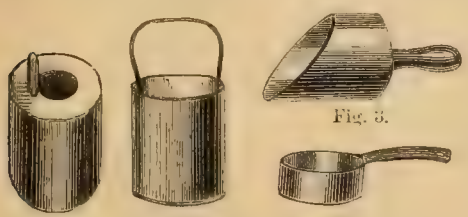


Fig. 1. Fig. 2. Fig. 3. Fig. 4.

them up themselves, and there are but few who do not have more or less cans during the year. The old cans seem to be too good to throw away, and as there is no sale for them they accumulate, as but few are found useful in the kitchen or workshop. Those who are handy in the use of the soldering iron—and every farmer should learn how to tinker—will find various uses for the old cans, and need

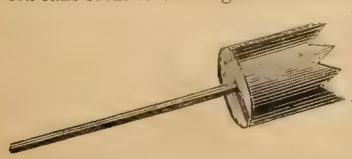


Fig. 5.

no advice. A friend, who is ingenious in such matters, has given us sketches of various articles, which may be made from the cans without the use of the soldering iron, which are here presented. A can, after it is emptied, (fig. 1,) should be washed at once, and dried, otherwise it will be difficult to clean. If the tin be wanted, set the can upon the stove until the solder melts, strike off the top and

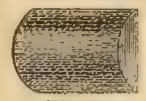


Fig. 6.

Fig. 7.

bottom, and flatten out the piece which formed the sides. The tin is very thin, but sufficiently strong for many uses. It may be cut with ordinary shears, and be punched with an awl, or a nail filed to a point, if no regular punch is at hand. Strips of tin are useful to cover mouse and rat-holes, and various other purposes. By the exercise of a little care, it is easy to unsolder the top or bottom of a can, and leave the rest entire. Take off the top of the can, punch holes on opposite sides near the rim, put in a wire bail, and you have a little bucket as in fig. 2, which may serve for a paint pot, to keep nails in, or for numerous other uses. Take off the top, cut the proper shape, and fasten on a handle by means of a screw through a hole in the bottom, and a useful scoop (fig. 3) may be made. A number of these will be welcome to every housekeeper. A saucepan for small messes may be made by cutting down a can, leaving a strip to be bent at right angles, as in fig. 4. If the strip for the handle be left wide enough to bend around a stick, it will be much stronger. A can from which the cover is removed, has two or three large teeth cut in its margin, and then fastened to the end of a staff (fig. 5); it thus forms a fruit-picker, to reach out of the way specimens, and is quite as serviceable as more complicated ones. A coarse grater for crackers, dry bread, horseradish, and the like, may be made with a piece of the tin tacked to a bit of board, as in fig. 6; the holes in the grater are best if made with a triangular punch, which may be filed up from a nail, or made of an old three-cornered file. Muffin and cake-rings (fig. 7) are readily formed from strips of the tin bent into the desired shape, and held by a rivet, or bending the ends so as to interlock. Our friend suggests that by cutting out a piece from the side of a can and putting in a bit of stove mica, as in fig. 8, a lantern may be made, but this is a little more complicated than the rest of his suggestions. There are several horticultural uses of these cans, which have been in former volumes mentioned in their proper department, but that they may be used in the absence of flower-pots, (fig. 9,) will readily suggest itself. The principal objection to their use is the fact that they are not porous, and there is danger of injuring the plants by keeping their roots too wet. If one puts in plenty of broken crocks, oyster-shells, or cinders, and over this a little moss before putting in the earth, and then watches the plant, as every lover of flowers should, there need be no danger on this score—but in growing plants in glazed pots, cans, or any non-porous thing, beware of too much water. The cans may be painted, and no doubt some ingenious persons will contrive a way to ornament them. A plant should be so well grown that no one will care to notice what kind of a pot it is in.

Fig. 8.

Fig. 9.

Home Topics.

BY FAITH ROCHESTER.

Judging Parents by their Children.

We "live and learn"; and one thing that teachable people learn by experience, is to be charitable in their judgment of others. Before any of our children are a dozen years old, we begin to speak mildly of other persons' failures in bringing up their children; for we discover that our influence for good over our children is counteracted in a large degree, by the influence of other people, and that our own example before our children, is far from being as good as we wish. Children's manners are not formed wholly upon the parental model, unless they are restricted almost entirely to parental society—a thing nearly impossible, as a general thing, and hardly to be desired.

If there are no neighbors and playmates, there are probably grandparents, and uncles and aunts, all helping to educate the little ones by their example, right or wrong. A year and a half ago one of our children was two years old. She had then a very pretty habit of saying "hank oo," or "hank oo ma'am," for every gift or favor, even for the pin she asked for dolly's toilet, or for playthings picked up when dropped. She did this without prompting, and without special instruction at any time. Even when she waked in the night and asked for water, she was not too sleepy to murmer her thanks. After a few months of daily association with children who lived near us, she had lost this habit, and gained some other modes of speech not quite so lovely. About that time I heard her speaking of one of her parents—in loving tones to be sure—as "an old fool."

I like to have the children play out of doors a great deal, and play hard, running and shouting as much as they please, if they do not disturb reasonable people. Some persons are so unreasonable, or so selfish, that they would never allow children to be as noisy and as active in their play, as their healthful development demands. But I see, again and again, that half a day's free association with the boys of his own age, very perceptibly affects the manners of my little boy. He comes in so saturated with the impudence and domineering ways that prevail among his playmates, that before he thinks what he is about, he is acting the same manners at home. Worse than that, his manners, brought in from the play ground, are copied more or less by the younger ones. How powerless a mother sometimes feels against these influences, that come pressing into the home circle from the outside, as she sits perhaps with a teething babe at her breast, and with other little ones crying about their cut or burnt fingers, or begging for some help in their plays.

I do not suppose that all the evil influences, against which we have to contend, come from outside the family, for I see how imperfect in culture most of us parents are. But society outside the home circle—in the school, on the play-ground, along the street, at church, at Sunday-school—modifies more or less the education of our children.

Over-Socks.

There is nothing more convenient to pull on hastily over the feet and ankles, when going out into the cold, than knitted over-socks. It takes more time to arrange leggins and arctic over-shoes properly, and many times they are left off because one is in too much haste to put them on, when some such protection is really needed. I have here a pair of strong home-knit socks for a child of five or six years. They are knit of coarse grey yarn, striped in three places on the leg with scarlet — three rows of scarlet at each stripe, each row made by knitting three times around, with two "times around" of grey between the red rows. They are seamed all of the way, and shaped to the foot, which is knit first. Cast on one hundred and twenty six single stitches, or forty two on each needle. Knit around, seaming one stitch and knitting two plain, until you have knit from an inch and a half to two inches. If you wish to have the socks sew together under the sole, knit

OVER-SOCK.

fully two inches before beginning to narrow, but this seems to me unnecessary, as a strong cloth sole is needed anyhow, and the time and yarn may as well be saved for something else.

The sock I have before me, has a plain strip of three stitches, running straight up from toe to ankle upon the top of the foot, on each side of which the narrowing is done—made in fact, by such narrowing. To begin this strip, or to begin narrowing; narrow once, then knit two stitches plain, and take off another stitch without knitting it, knit the next stitch plain, and slip (with the aid of your needle) the unknit stitch over it, and go on knitting around as before. To old knitters it would be enough to say simply—narrow, knit two stitches (or more if you wish a wider strip on the top of the foot), slip and bind once, and knit around as before. Do this every time around at the same place, till the sock is small enough for the leg. This sock has twenty seven stitches on each of the three needles in the leg, or eighty one around it. The leg is about ten inches long.

To knit over-socks of different sizes, you have only to vary the number of stitches according to the size wished, and according to the fineness of your yarn. The coarser the yarn the fewer stitches required. Soles of leather or buckskin are best, but thick cloth is generally used.

Baby's Winter Clothes.

I should like some winter boots for baby, knit in the fashion described above, of warm double zephyr, and soled and fixed with soft warm cloth, to wear over his long-legged white wool stockings. The worsted boots he now wears, are not so warm or so strong as these would be. I think that a baby over four months old, ought to have its feet and legs so warmly dressed, that it can kick them about free from its entangling skirts, without exposure to cold. I do not keep my babies in long clothes after they are six months old. Indeed, its first long clothes are of such moderate length, that they will almost do for short ones without alteration, by the time that they are laid aside. Aside from the length, it is well that the clothing be made of more substantial materials for a baby of six months, if the weather is cool. Soft colored flannel for dresses, made just long enough to reach the toes, and made loose and as simple as possible. The plain gabrielle, not too full, seems most suitable. Over this I like pretty soft wool sacks, that can be washed, knitted or of flannel cloth, and white bibs for babies who drool or vomit. The sack may be cut away in front, so as to fasten under the bib with only one button. A safety pin fastens the bib down, or a pretty cuff pin, if the mother has one to spare for the purpose. Or the bib may be tied back under the sack, with strings sewed on the sides, near the bottom, and slipped through openings in the sack under the arms.

KNEE-CAP.

Of course, any mother who prefers, will put aprons on her baby instead of sacks and bibs, or she may use the bib or sack, and omit either one. I am thinking aloud for myself, in part, as my next business after this manuscript is dispatched, is the making of baby's winter outfit, and we live in a cold climate. I want the little fellow clad so warmly, that he can be comfortable in his high chair, or baby-jumper, or crib playground, where he can sit alone half an hour or more at a time. Next his skin I will put a soft white flannel long-sleeved waist, buttoned behind, and with a gored flannel skirt buttoned to it by six buttons around the bottom of the waist. To this waist will also button the thick flannel knee-caps. I have never cared to use the diaper drawers, except upon a few dress occasions, as they seem to be merely ornamental, and are too much trouble for every day use. Knee-caps are quite different, giving protection from cold where it is needed, below the diapers. My baby's stockings shall be long enough to reach his diapers. At present they are pinned thereto with small safety pins, to prevent his kicking them off, but he has learned to tug at the worsted boots he wears over his stockings, till he pulls them off, and I must devise some means of keeping all these lower garments in place without ligatures, and without any restraint upon his most wholesome kicking propensity. Shall it be an elastic strap connecting with the waist, and buttoning to each pair of socks? Or will it be better to have the outer knitted boots button to the bottom of the knee-caps? In that case perhaps there should be a short piece of elastic strap at the top of each knee-cap. A ribbon drawn through the boot, and tied around the ankle, *not too tight*, would perhaps be sufficient for the outer socks. Pretty soon, when the weather gets warmer, and the little fellow wants to stand on his feet, he must have the softest of shoes. I give a figure showing the appearance of the completed knee-cap, which is so simple that any woman can easily construct the garments. They are worn over the diaper, the pointed portion or straps running up, over the diaper, to the buttons on the under waist.

A Week's Bill of Fare.

I have just made out a bill of fare which is to serve our family for the ensuing week. It would not exactly suit any other family. I have not made it up as my ideal of the best possible, but of such materials as it will be most convenient for *me* to use in the coming week. It is possible that I may obtain some fresh beef or mutton in the meantime, and then the programme will be altered. At present we have no fresh meat, and no immediate prospect of any. It is partly on this account that I give the bill here, as some housekeepers "do not know what in the world to get," when they are out of fresh meat, unless they make a free use of pork.

It may be well to explain that my family at present consists of two women, (the hired girl and myself,) and four children. In providing for our daily wants, I try to remember that we need food to keep us warm, to give us strength for physical and for mental activity, to repair our daily waste, and to keep the children growing. Our tastes also must be taken into account. Nothing is said about supper, because this is usually omitted, breakfast being at 7½ or 8 o'clock, and dinner at 1½ or 2 o'clock. If the little ones are hungry, they have only bread and milk at night; the hired girl helps herself to what she likes; while I am generally best suited, even while nursing a babe, to take no supper at all. In many families this is practiced on Sunday. At all our meals there is white yeast bread and butter upon the table, also milk. We eat bread and milk much more than bread and butter:

Sunday.—Breakfast: oatmeal balls or gems, boiled potatoes, mackerel. Dinner: dried sweet corn, graham gems, crab-apple jelly, boiled chestnuts.

Monday.—Breakfast: baked potatoes, milk and egg gravy, baked squash, cocoa. Dinner: pearl-barley and onion stew, graham pudding, prune sauce.

Tuesday.—Breakfast: mush balls, potatoes, codfish. Dinner: bean soup, apple sauce, (remember that there is always bread and butter and milk.)

Wednesday.—Breakfast: johnny cake, steamed squash, potatoes, milk gravy. Dinner: split pea-soup, rice and raisin-pudding.

Thursday.—Breakfast: graham gems, scrambled egg, potatoes, cocoa. Dinner: corn-meal mush and milk, baked apples, (the usual bread and butter.)

Friday.—Breakfast: milk-toast, baked squash, baked potatoes. Dinner: boiled onions, warmed potatoes, raspberries.

Saturday.—Breakfast: cabbage, graham gems, potatoes, egg gravy. Dinner: bean soup, oatmeal mush, raw apples.

No other week in the year will have just the same bill of fare. Just now there is more Hubbard squash, because I shall be unable to keep them after the very severe cold weather comes on. Nothing is said about tea or coffee, because *paterfamilias* is absent, nor always when he is here; but either is very cheerfully prepared for any guest who likes them, and on such occasions I do not hesitate to take a little too. There will probably be no other week during the winter when there will not be one or two beef-soups for dinner, or beef in some shape almost every day. However, my own experience and my observation of the children's health, leads me to believe that there is no *necessity* for meat when there is good graham and oatmeal and milk, with butter or cream. Does any one observe the absence of pie and cake? Their absence is scarcely thought of here, but a total abstinence from the plainer varieties is not intended.

The breakfast bills of fare that have been published so far in the *Agriculturist*, have generally given great variety, but they have no doubt been intended for larger and more varied families than mine is at present. I am sometimes asked to say more about food for children. As my cooking is done mainly for children, perhaps this is sufficient.

Barley and Onion Stew.

Wash half a pint of pearl barley, and soak it over night or for two hours in warm water, boil it from two to three hours in a good deal of water, filling up with boiling water as often as it thickens much, so that it will always preserve its soupy character. An hour before serving it, add four or five sliced onions, and soon after salt to taste. At the last add half a pint of cream or milk, and boil up together. More milk and salt may be added, and the whole poured over slices of bread, if preferred. The "croutons," over which most of our soups are poured, are simply small slices of sweet light yeast bread, and these are always welcomed by the little folks. Gems are more crusty and not so spongy.

Oatmeal Mush Made into Bread.

Oatmeal mush is good and wholesome, but it is generally relished better in its secondary forms, as balls, griddle cakes, or gems. I have already told how the balls, (or mush-balls of any kind,) are made—simply by kneading the cold mush into a rather stiff dough with fine flour, with or without the addition (and improvement) of a little cream or milk. These are shaped in balls or small biscuits, and baked in the oven.

To make griddle cakes, soak cold oatmeal mush in sweet milk, and thicken to the proper consistency for griddle baking with fine flour—a rather stiff pancake batter. If you can not guess at this, try a little on the griddle. No baking powder is needed, but well-beaten eggs are an improvement, one or more, as you can afford. I put some mush soaking in milk and water, with some pieces of stale yeast bread, one night, thinking to make pancakes in the morning, but when morning came, I dreaded the smudge, and so stumbled upon our much-liked *oatmeal gems*. The mush and bread are mashed and stirred fine with a spoon, and then fine flour is stirred in until there is a batter about as stiff as you can well dip into the gem pans with a spoon. This is our favorite way of eating oatmeal at present, and the bread added is an improvement. Remember that the batter must be quite thick, as the oatmeal is already cooked and will not rise any more.

Oatmeal has the name, among those who study into such matters, of being excellent food for both muscular and mental activity—very useful alike for student and laborer, and excellent, if thoroughly cooked, to promote the growth of little folks.

Another Word About Graham.

At last we have what we have long desired—graham meal of excellent quality, in which the bran is cut so fine that its appearance is scarcely noticed. It comes in sacks from St. Paul, where it is manufactured, and is called "graham flour from granulated wheat." This flour, like the granulated wheat, (which is a very nice article of food, otherwise called "graniolo,") seems to have the starchy portion of the wheat, or the fine flour, removed. It seems like very nice canaille, but the bran is all there after all, I should think, but beautifully fine.

To make gems with it for breakfast, we usually stir a thin batter of the granulated flour and water at night, and thicken this with fine flour in the morning, before putting it into our hot gem pans and hot oven. For persons who live mostly upon fine flour bread, it may be best to eat this flour as it comes, without the starchy portion, to restore the equilibrium, but I like best to make it with the addition of some fine flour, as we all prefer now to live more upon gems than upon yeast bread.

BOYS & GIRLS' COLUMNS.

About Ball Covering.

It requires considerable skill to cover a ball nicely, and when a boy is known to be handy at the job, his friends are quite sure to give him all the work of this kind that he wants. The old way was to make the covering like an orange rind, cut in quarters for peeling, and very good covers have been made in this way. The fault with this

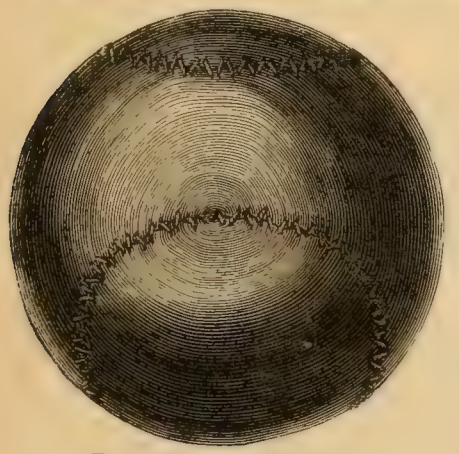


Fig. 1.—THE BALL COVERED.

kind of a cover is that the seams all meet at one place, and the divisions all taper here to a point, so that this is the weak spot, and the place where the cover gives out first. The balls that are sold in the stores are covered in quite a different manner; there is no one point where the seams come together, and upon no part of the ball can any more seams be seen than in figure 1. The cover is made of two pieces of the shape shown in fig. 2. And when put together upon the ball, each rounded end fits into the hollow part of the other piece, as shown in the

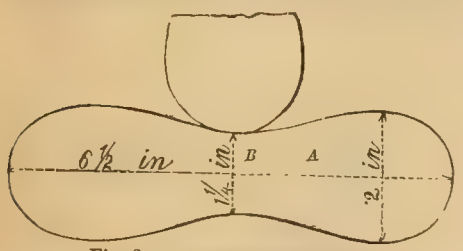


Fig. 2.—COVERING FOR A BALL.

upper part of fig. 2. For a ball 2½ inches diameter, the pieces are, through the line *A*, 6½ inches long, and through the narrowest part, *B*, 1 inch. A ball 2½ inches through, will be about 7½ inches round, and the length of one of these pieces, and the width through the narrow part of the other, make 7½ inches. In making a cover for balls of other sizes, this rule must be observed—the length of one of the pieces and the width of the narrowest part of the other, should be equal to the circumference of the ball. Figure 2 gives the proper shape, and this for a larger ball, can be readily got at by trying with a paper pattern. The leather is put on damp, so that it will be tight when dry, and allowance should be made for this.

Aunt Sue's Chats.

ADDIE says they are "going to have a fair to make some money to pay for an organ" at her church; and that she is a little bit of a girl, but she wishes she could make something for it. Well, Addie, suppose you begin by making some match-scrapers; they will be very useful, if the Bridgets in your village scratch the walls with matches as ours do. Get two or three sheets of black sand-paper, (or emery paper,) at the hardware store, and one sheet of gilt paper, at the stationer's. Cut your sand-paper into pieces about six inches long by four inches wide. Stick each of these, with flour paste, on to a piece of cardboard the same size; then bind the edges with strips of gilt paper. Now make a cord by twisting together some worsted, (red and white, blue and white, or all of one color, if you choose,) put a little worsted tassel at each end of the cord; pierce two holes in the scraper, and put the cord through to hang it by, as you see in the cut, (fig. 2.)

Fig. 1.—PIN-CUSHION.

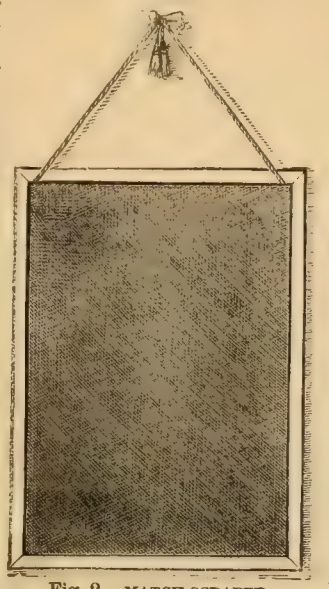


Fig. 2.—MATCH-SCRAPER.

Then there is the "tomato-pincushion," which is very easy to make, and very useful in the ladies' work-baskets, both for pins and needles. Cut two circles of crimson (or any other colored) merino, about as large as one of your little preserve saucers. Sew them all round, except a couple of inches, on the wrong side; then turn them. Fill the pincushion, (through the two inch opening left unsewed,) with bran, or clippings of flannel, until it is about full enough, (you will soon find out what is "enough"): then sew up the two inches. Now take some sewing silk of the same color as the merino; thread your needle with it, doubled. Pass the needle up through the center of the cushion, take the silk over and under, and pass the needle up through the same hole again, drawing the silk pretty tight; repeat this until you have divided your tomato into the right number of sections, then fasten the silk off carefully, and your pincushion will be completed, and be like figure 1.

Aunt Sue's Puzzle-Box.

CHANGED HEADS.

Change my head several times and make: 1. An animal; 2. An emotion; 3. Beloved; 4. Accoutrements; 5. One of Shakespeare's characters; 6. Almost; 7. To elevate; 8. To dry; 9. To sever; 10. A period of time; 11. A dam; and 12. A fruit.

DOUBLE ACROSTIC.

The initials form a city in Russia; the finals a city in Ohio.

1. A city in Pennsylvania.
2. A city in Turkey in Asia.
3. A county in Kentucky.
4. A city in New York.
5. A city in Austria.
6. A county in Maryland.

BILLY BUTTON.

NUMERICAL ENIGMA.

I. I am composed of 14 letters:
My 9, 11, 14, is to prosecute at law.
My 1, 2, 14, is color.
My 5, 4, 7, 10, is to pierce.
My 3, 7, 8, is a girl's nickname.
My 6, 7, 3, 12, 13, 14, is to cut to pieces.
My whole is a musical instrument.

MARY.

SQUARE WORDS.

1st.—1. To kiss loudly. 2. A fruit. 3. Single. 4. A bow. 5. To bend down. M. M.

2nd.—1. To submit. 2. To invest. 3. A decree. 4. Money. 5. To hinder. F. VONDERSMITH.

ANAGRAMS.

1. Wire in tent.
2. Missing toy.
3. I land a riot.
4. Cure Sir.
5. O! but I arise.
6. A small herd.
7. This is Mac C.
8. O! cur is on gun.
9. Free a crab? No.
10. Go fly one bird.

QUERY.

What river in the South is suggestive of a fast person? G. FARMIN.

RIDDLE.

Two rows of men, all clad in snowy white,
Who never leave their camp to show you fight,
But if you venture in are sure to bite.

MRS. LIZZIE MOORE.

ANSWERS TO PUZZLES IN THE NOVEMBER NUMBER.

NUMERICAL ENIGMAS.—1. Lafargeville. 2. Thou shalt not steal.

PUZZLES.—1. Sackbut, (cask, tub, butt.) 2. Walnut, (nut, law.) 3. U C U O 0, (you see you owe nothing.)

DIAMOND PUZZLE.—

B
B E D
B E G U M
B U N
M

CROSS-WORD ENIGMA.—Uncle Tim.

EQUIVOCAL WORDS.—1. Commit. 2. Concordance. 3. Corn. 4. Count. 5. Crab. 6. Craft.

SQUARE WORDS.—1.—M E A N / E L L A / A L U M / N A M E 2.—M O D E / O P A L / D A R K / E L K S

TRANSPOSITIONS.—1. Brute, tuber. 2. Geneva, avenge. 3. Talma, Malta. 4. Binder, rebind. 5. Grown, wrong.

ARITHMETICAL PUZZLE.—Machine, engines.

M- at -E
A- lla -N
C- lo -G
H — -I
I- nma -N
N- ic -E
E- lve -S

PI.—A great genius will candidly acknowledge his defects.

Thanks for letters, puzzles, etc., to Dot, Lily, Yankee Doodle, Bullfinch, G. H. Fuller, W. M. I., Mary J. D., O'Toole, Addie, and J. R. D.

Send communications for the Puzzle Box to Aunt Sue. Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Doctor's Talks—Blowing Soap Bubbles.

Where there are a lot of nephews and nieces, ranging all the way from the ages of three to eighteen, who look to their uncle for amusement, it is not easy to hit upon something that will interest all. The other evening little Fanny proposed soap-bubbles. Whereupon Master Walter, with all the dignity that belongs to the mature age of 16, pooh-poohed at the idea—soap-bubbles would do well enough for little children, but they were quite beneath the attention of the venerable youth.—"Wat," said I, "there is a good deal to be learned from a soap-bubble. It is indeed a very interesting thing, and has been studied by some of the most learned scientific men, who have investigated it very carefully."—"Well," said Wat, "a soap-bubble is nothing but a soap-bubble, and all you have got to do is to blow it, and after you have made it, off it goes into nothing, and that's all there is about it—science indeed; why, even Fan knows as much about soap-bubbles as the scientific men. The idea that there is anything about a bubble that we all don't know seems to me absurd."—"All right, we will make some bubbles. Fanny will get the water and the pipes."—"Water," said Wat, "you can't blow bubbles with water."—"Why not?"—"Because you can't."—"I fail to see that you have given any reason. And as you know all about bubbles, please tell us why you need soap in the water."—"I know," said Arthur, "it makes them hold together."—"Yes, that is the reason, the attraction between the *molecules* of soapy water is greater than that

THE SOAP BUBBLE TOY.

between the molecules of pure water."—"But uncle," asked Wat, "what do you mean by molecules?"—I might have reminded him that he knew all about bubbles, and ought to be able to answer himself, but having him in a teachable mood, I replied, "all matter, iron, stone, water, air, everything that we know as matter is supposed to be made up of infinitely small parts called molecules."—"O yes," said Wat, "our teacher told us that water was made of oxygen and hydrogen, and these are the molecules of water."—"Not at all, you are right in saying that water is composed of oxygen and hydrogen, but these are not molecules, a molecule of water is itself composed of these two elements, just as much as a pail-ful, pint, or any other quantity of water. If it be separated into oxygen and hydrogen, it is no longer water. There is a very interesting thing about bubbles, that depends upon the action of the molecules, and when we come to talk about that, we must also talk about the size of the molecules, so for the present we can only say that a molecule is the smallest particle of any substance that we can conceive of. Ever so much smaller than any microscope can measure.—Still their size has been estimated, but we will get to that after awhile."—Meantime the little girl had been making her suds, and a very odd mixture it looked, there were little white particles all through it, like minute bits of curd. Upon inquiry, I found that she had used well-water, so I sent her to make another dish with rain-water, and that was all right. I asked the boys why the suds made with rain-water was clear, and that with well-water was curdy—but I found that they only knew that one was soft and the other hard water, and asked me to explain. "You see, boys, that before we get to making our bubbles, we have had to go into physics, as people now call natural philosophy, and talk about molecules, and now to explain why one kind of water makes good suds, and the other does not, we must call upon chemistry. To tell all about soap would take too much time, for, common as it is, it is a very interesting substance; all that you need to know now, is that hard soap is a compound of fat and soda, or more properly speaking, a part of fat, *oleic* acid it is called, and soda. The chemist calls it *oleate* of soda, but we will call it soda-soap—which readily dissolves in water. This oleic-acid, with lime instead of soda, makes a soap, but this would hardly be very useful, as it does not dissolve at all in water. Now the well-water all about here contains a great deal of lime, and when used with soap, the lime in the water takes the oleic-acid away from the soda, and makes some lime soap which floats about undissolved, as little white particles as you see it here."—"Yes," said Arthur, "that's what makes my hands feel so sticky when I use well-water to wash in."—"Exactly, and in some cases, as in our's, the water is not fit to use for washing. Well, here is the suds and three pipes—the boys need not blow, as it is not dignified for them, but the three girls may take the pipes, and as I am an old man, but not too old to enjoy the fun of making bubbles, and their wonderful beauty, I will beat you all three without any pipe at all."—Of course there was great wonderment and guessing, which I put an end to by taking out a "Soap-Bubble Toy," and blowing some fine large bubbles. The pipes were at once laid aside, and all must see and try this novel affair—and I had to explain it. The toy itself, is shown in the lower part of the engraving which is on the page before this, and the manner of using in the upper part. There is a cylinder in which there is a piece of soap, some water is put in, the cap screwed tight, and the affair shaken until sufficient soap has dissolved to make suds. Then there is a little knob to touch, which opens a valve and lets down a drop of suds to the shallow bowl, and a tube through which to blow. In using a pipe you dip it in the suds and take up a drop, which is spread over the bowl of the pipe; in this toy the drop is let down from the inside. After they had all tried the toy I proposed to show them something that could not be done with a pipe. After a bubble was blown, about as large as an egg, I touched the knob and blew another to which the first one remained attached, then another, with the two banging to it, and so on until a chain of six or eight was made. "What a nice toy. Who first made it, and how came he to think of it?"—"Like many other inventions, this came of a chance remark; my friend, Mr. S. B. Bliss, was travelling in California, a year or two ago, and at a house where he was staying, some children were amusing themselves with bubbles, but at the same time making a muss with their clothing. 'O dear!' said the mother, 'I *do* wish there was some way for children to blow bubbles and not soil their clothes.' This set Mr. Bliss to thinking, and he soon had the toy ready, to the great comfort of this and other mothers."—But the editor will not allow me to give all my soap-bubble talk at once, and I must keep the rest for another month.

THE DOCTOR.

LEARNING TO SEW.

Learning to Sew.

When a little girl sees mother or some other expert sewer at work, she thinks "Don't I wish I could sew like that! It would be fun to sew then."—How easy it seems, as mother sits and talks, and hardly appears to look at all at her sewing, but the needle flies in and out, and the little stitches all alike and even, appear side by side, almost as if they sewed themselves. Yet mother, and other rapid sewers, all began very slowly at first, they made long and short stitches, some near together, and others far apart, and many a time have they felt ready to cry, when told by *their* mothers that the work is not satisfactory, and must be picked on and done over again. The little girl in the picture, is taking one of her early sewing lessons, and no doubt she thinks it is very slow indeed, and that she shall never be able to sew like the good grandmother who is teaching her. The little girl can now run and romp with the rest of them, and she does not remember how she learned to walk, step by step, before she could run at all—and when she becomes handy with the needle, she will forget how troublesome it was to learn to make the first stitches, how the needle would go where it was not wanted, how the seams would get puckered, the thread knotted, the fingers pricked, and all the troubles that attend the beginner. The French have a very pretty saying, which translated is: "Little by little the bird builds its nest"—and it is a good saying to remember when lessons in sewing, or anything else appear tedious, recollect that it is "little by little" that everything useful is learned. The great players, like Rubenstein and others, who make the piano sing such wonderful music, once sat before the keys and counted one—two—three—four—and no doubt thought it all very stupid. Lately it has somehow happened that we have had more pictures for boys than for girls, and this one was selected as especially a girl's picture. But we are not quite sure that it does not appeal as much to the boys as to the girls, for we think that all boys should be taught to sew. "I should just like to see myself at it," your brother will say. "Boys sew, indeed! guess the *Agriculturist* has got a new wrinkle, no, not any sewing for me, I thank you,"—just listen a minute young man, we do not mean that you should be set at making up the sheets and pillow-cases of the family, but that you should know how to thread a needle and to use it. You think it very manly to be able to cover a ball nicely, and it would be none the less manly, if in case of need you could sew up a rip, replace a button, or if need be put on a patch. The one who writes this, has had a varied experience, he has at times been where he had to depend upon himself for all those things, that at home others look out for, and many a time has he had cause, when far from home and all civilization, to be thankful to the good mother who taught him, when a little child, to use a needle. It is true that sewing machines save much sewing, but they do not make it the less necessary that girls should learn to sew, for there is much sewing that is not and probably never will be done by a machine. In putting on a patch for instance, the machine is rarely of use, yet patching and darning are among the most useful of all kinds of sewing. Do not be discouraged if you make slow progress in your sewing, each day it will slowly, but surely come easier, and at length the needle will fly, and the work be beautifully done almost without effort.

Life Insurance.

It is the common error of those who thoughtlessly or maliciously attack our Life Insurance Companies, to forget that the whole system of Life Insurance has attained its present proportions through the operation of one simple element—and that is, the prudential foresight which impels the husband and the father, to make timely provision for the comfort of the family he is to leave behind him at his death. In other words, it is the confidence of the general public in the security offered by our great Life Companies, that explains the rapid and continued expansion of this important interest. The case has been very cleverly and succinctly stated by the Insurance Commissioner of Massachusetts, in his Report for the year 1872, when he says: "Savings Banks meet a real want, as well as Life Insurance Companies, and yet their introduction and multiplication have been steady and gradual, not quick and sudden. Life Insurance has been successfully introduced into other countries besides America, without attaining the gigantic proportions already reached in our own—a fact from which many suggestive lessons may be drawn."

The increase in this country during the three years from 1869 to the end of 1871, was:

In the number of Life Insurance Companies.	14
In the number of Policies outstanding. ...	177,737
In the amount insured.....	$332,716,059

—showing that there was a steady increase of the number of policy-holders during the years 1869, 1870, and 1871, at the average rate of upward of 55,000 annually, and a corrresponding increase equal to One hundred and Ten Millions of Dollars annually, in the amount insured.

It is, therefore, manifestly but an idle waste of breath, to attempt to throw discredit upon an interest so important as this. The bitterness of the attacks, which have occupied the columns of the public press for some time past, may be charitably attributed to private or personal grievances, with which the public has nothing to do, and for which it cares very little—yet when so many bold attempts have been made to shake the faith of the insured in the stability of the insurers, it is but common justice to remember that the Life Insurance system in the United States, has attained its present dimensions because it commends itself to the good sense of a sagacious people, and that that people do not continue their support from year to year, without having sound ressons for the faith that is in them.

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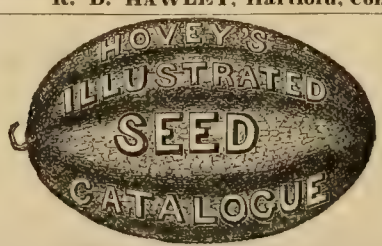

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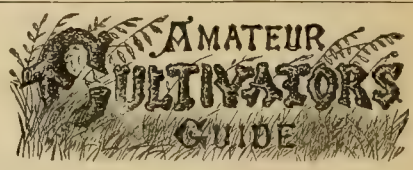

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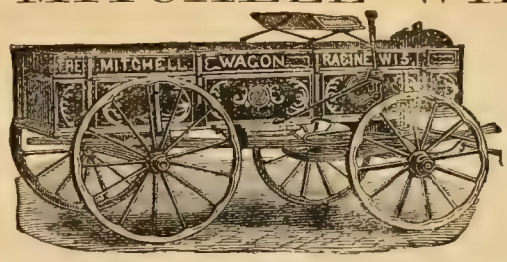

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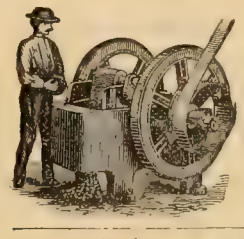

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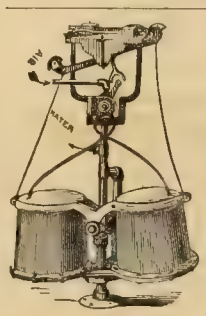

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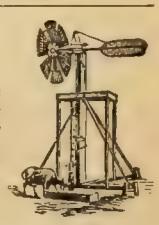

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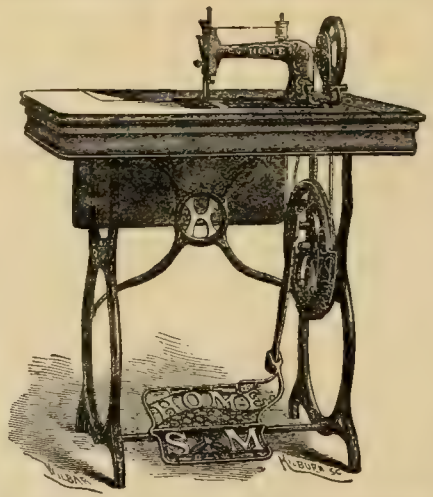

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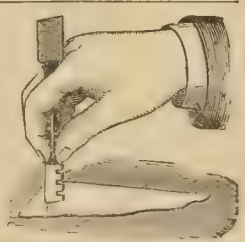

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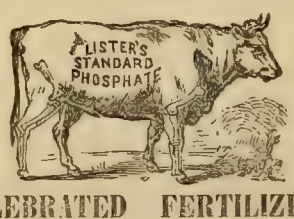

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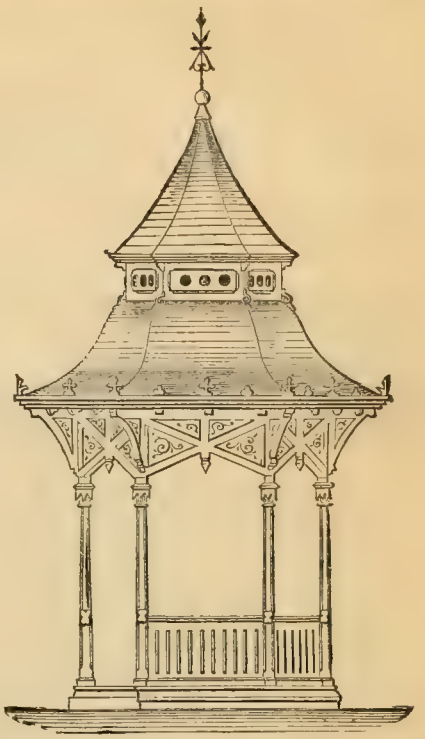

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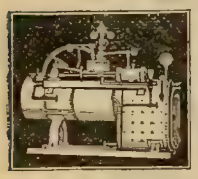

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THE BARNYARD.—*Drawn and Engraved for the American Agriculturist.*

The barnyard may be taken as the index of the character of the farmer. As is the barnyard, so is the farm and the farmer. It is well that all of us should remember that in this case it is no figure of speech to say that "straws show which way the wind blows." The arrangement of the barnyard is not for show altogether. The profits of the farm depend to a great extent upon it. It is in the yard and the barns that the produce of the farm that is not sold outright is converted into beef, pork, mutton, wool, or milk and butter, articles that may be more profitably sold. It is in the yard also that the manure is made and kept. The barn and barnyard are the manufactory of the farm, and if they are not arranged with a view to economy, a large waste results that reduces the farmer's profit. There are many thousands of such barnyards as that shown in the above engraving. The majority of farmers in this country from necessity begin business with small means, and do the best they can with the materials they possess.

The excellence of farm buildings does not consist so much in the materials of which they are built, as in the use made of those materials. Useful buildings may be made of logs or prairie sods, or poles and coarse hay, and these, by skillful arrangement, may be made to serve as useful a purpose as dressed lumber and paint, or pressed bricks. The main points are warmth, dryness, and ventilation; for food is wasted when an animal shivers in its stable, or when its health is injured by damp, filth, or bad air. The owner of the barnyard here illustrated has made good use of poor materials, and his barn has what many more pretentious ones have not, a wind-break to the stable door. A farmer who is thoughtful about such small things as this, (although this is more important than it appears,) may be taken to be a careful, thrifty man, who, by and by, will be able to build a barn with all the modern improvements, and to build it properly, too. The old proverb, "take care of the small things, and the large ones will take care of themselves," is applicable to matters about farms, and barnyards especially. When the small things are well watched, large ones are not forgotten.

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A Good Pig.—W. H. Fry, of Ontario, writes: "I bought a pig on the 16th of last March for $3, he being then 2 months old, and the smallest of a litter of thirteen. I killed him Nov. 18, when ten months old. He weighed, dressed, 334 lbs. He was a cross between the Essex and Chester White."—We believe this cross is giving general satisfaction. A large sow, bred to a fine boned, highly refined, thoroughbred boar, makes a capital cross. It does not matter what breed the sow is, so that she is of good size, strong, healthy, and vigorous.

Calendar for February.

Day of Month.	Day of Week.	Boston, New England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon rises.
		H.M	H.M	H. M	H.M	H.M	H. M.	H.M	H.M	H. M.
1	M	7 14	5 11	3 16	7 10	5 18	3 40	7 6	5 22	3 33
2	T	7 13	5 13	4 18	7 9	5 19	4 41	7 5	5 23	4 34
3	W	7 11	5 16	5 16	7 7	5 20	5 39	7 4	5 24	5 31
4	T	7 10	5 18	6 33	7 6	5 22	6 27	7 3	5 25	6 20
5	F	7 9	5 19	7 10	7 5	5 23	7 4	7 2	5 26	6 58
6	S	7 8	5 20	sets	7 4	5 24	sets	7 1	5 27	sets
7	S	7 7	5 22	7 5	7 3	5 25	7 7	7 0	5 28	7 9
8	M	7 6	5 23	8 19	7 2	5 26	8 19	6 59	5 29	8 20
9	T	7 5	5 25	9 32	7 1	5 28	9 31	6 58	5 31	9 30
10	W	7 4	5 26	10 45	7 0	5 29	10 42	6 57	5 32	10 40
11	T	7 2	5 27	11 58	6 59	5 30	11 55	6 56	5 33	11 51
12	F	7 1	5 29	morn	6 58	5 31	morn	6 55	5 34	morn
13	S	7 0	5 30	1 15	6 57	5 32	1 11	6 54	5 35	1 5
14	S	6 58	5 31	2 31	6 56	5 33	2 25	6 53	5 36	2 19
15	M	6 57	5 33	3 45	6 54	5 34	3 38	6 52	5 38	3 30
16	T	6 55	5 34	4 58	6 53	5 36	4 41	6 50	5 39	4 33
17	W	6 54	5 35	5 10	6 51	5 37	5 34	6 49	5 40	5 27
18	T	6 52	5 36	6 19	6 50	5 38	6 14	6 48	5 41	6 8
19	F	6 51	5 38	6 52	6 49	5 40	6 48	6 47	5 42	6 43
20	S	6 50	5 39	rises	6 48	5 41	rises	6 46	5 43	rises.
21	S	6 48	5 41	7 11	6 46	5 43	7 12	6 44	5 45	7 13
22	M	6 47	5 42	8 14	6 45	5 44	8 14	6 43	5 46	8 13
23	T	6 45	5 43	9 16	6 43	5 45	9 15	6 41	5 47	9 13
24	W	6 44	5 45	10 17	6 42	5 47	10 15	6 40	5 48	10 12
25	T	6 42	5 46	11 21	6 40	5 48	11 17	6 38	5 49	11 13
26	F	6 40	5 47	morn	6 38	5 49	morn	6 37	5 50	morn
27	S	6 38	5 48	0 24	6 37	5 50	0 19	9 35	5 51	0 14
28	S	6 37	5 49	1 30	6 35	5 51	1 24	6 34	5 52	1 17

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1st Quart	13	0 36 mo.	0	24 ev.	0	12 mo	12	0 12'h	11	40 12'h
Full M'n	20	3 17 mo.	3	5 ev.	2	53 mo	2	41 mo.	2	11 mo.
3d Quart.	28	5 7 mo.	4	55 mo.	4	43 mo	4	31 mo.	4	1 mo.

AMERICAN AGRICULTURIST.

NEW YORK, FEBRUARY, 1875.

The active work of the farm, if it has not already begun, is near at hand; indeed in the Southern States, where the weather is unusually open, winter is scarcely a season of rest, and the planter who has permitted the last month to pass, without procuring materials for compost, without breaking up his land, or who has not hired his hands for the coming season, must now lose no time, if he would not be behindhand. Though in the Northern States the ground is covered with snow, or frozen solidly, there is much preparatory labor to be done, if the farmer would not be driven by his work throughout the whole season. There is much planning and thinking to do, for it no longer pays to farm in a hap-hazard manner, and to secure success, a well-digested method must be adopted and adhered to, in spite of all obstacles. There are still in the newer States some places, in which the soil permits grain-crops to be raised year after year without manure, but even in those localities the experiences of the last two years have taught farmers, that they can not depend on grain alone for profit. The rich farmers are those who raise grass and roots, and produce stock, or butter and cheese, and make enough manure to raise occasional big crops of grain. The poor farmers are those who depend on corn and wheat alone. Even the greedy locusts of the plains spare the grass, and in the devastated districts those who have stock, have little reason to complain. In the South it is very similar. Cotton planters are poor, and find all the money their cotton crop produces, goes to buy food and feed. On the other hand, those who are raising corn and fodder along with their cotton, not only produce their own supplies, and save this outgo, but they make a good deal of manure, and have less of fertilizers to purchase. It is now a seasonable time to think over and discuss this subject.

Hints about Work.

While the northern farmer is carefully husbanding his resources, to support his stock during the long winter, and while his fields are either covered with snow, or bound by frost, the southern farmer is already busy in preparing for his crops. The time is nearly passed, when he can repair his fences, gather manure, hire labor, and clear and break up his new lands. All this ought to have been done already, or must be done forthwith. Early in April planting will commence, and there is but little time now to spare. Contracts should be made with the help at once; the best are always early taken, and the last who hires gets the refuse.

Manure.—This is a chief consideration almost everywhere. The gathering is not the only thing to be studied. To prepare it for use is equally important. Where there is little frost, composts of muck or woods' earth with lime, should be made without delay. Decomposition of the vegetable matter soon takes place, and the result is a very useful fertilizer for corn, grass, or cotton; if cotton-seed, or some stable manure is composted with it, it is so much more valuable. Where the winter is still severe, the manure pile should be turned over at least once, and twice turning will pay, as the manure will decay more rapidly; by mixing the different kinds together, the danger of dry rot, or "fire-fanging," will be avoided. Manure is of little use, until it is decomposed and plant-food developed; and as turning helps to hasten this process, the labor is well spent. What is hauled to the field should be spread as rapidly as possible. The more evenly applied, the better is its effect. If left in heaps, a rain will dissolve the soluble parts, and carry them into the soil, making the place where the pile stood too rich, and robbing the rest of the field, and a portion is worse than wasted.

Buildings and Fences.—Fine weather in this month may be chosen for out-door painting and repairing. The absence of flies and dust, and the slower drying of the paint, will go far to balance the inconvenience of cold fingers. Painting is a job that may be done in mittens. Fences should be made secure, before more pressing work causes this to be forgotten. No smaller nail than a "tenpenny" should be used for a board fence. A few pounds of No. 9 wire are useful in securing the top-rails, or the riders, if cut into lengths of 18 inches, and twisted around them, or the stakes where they cross.

The Workshop.—Abundance of work may be found in repairing baskets, boxes, crates, bags, tools, and implements, and for making new ones for use in the coming season. Every little thing made at home prevents the outlay of money. In the workshop a farmer's boy, when not at school, will find recreation, and occupation that will develop whatever talent he has, and make him "stick to the farm."

Farmers' Clubs may be made of great service, if properly conducted. To the usual discussions at this time should be added, the consideration of plans for making experiments with artificial manures, feeding stuffs, and new seeds, during the coming season, and the work of the next summer should be made the subjects for this winter's discussions. If farmers would read some works on political economy, such as Smith's Wealth of Nations, and Mill's or Carey's Political Economy, they would be better prepared to discuss the subjects of trade, and the laws of supply and demand, a knowledge of which is necessary for every business man. Late experiences go to show that a better knowledge of these subjects, and of human nature generally, would be valuable to those who exert influence through the Clubs and Granges.

Horses need extra care, as the damp, changeable spring-weather approaches. An increase in the feed may be gradually given, and close attention to the health exercised. The majority of the ailments of a horse are due to neglect of some simple needs, and the most prolific cause of these is indigestion, by which all parts of the animal may be seriously affected; the next prolific cause is exposure to damp, cold, and foul air. Sound, nutritious food, given in moderation, and at proper periods, pure water, and pure air, will keep a horse in health and good working condition. Colts need special care now, with kind, friendly management.

Cows that are coming in should be kept quiet, and fed with moderation. If the calf is taken away as soon as dropped, out of sight and hearing, and kept there, it will avoid much uneasiness with nervous cows, and often prevent withholding the milk, and consequent garget. Obstinate cases of

garget may often be cured by injecting a strong solution of bi-carbonate of soda into the teats with a syringe, and milking it out, repeating this several times a day; and bathing the udder with cold water, with a little tincture of arnica in it. If garget is feared, give a pound of Epsom salts at once as a preventive, and milk the teats frequently.

Sheep.—Feed as directed last month, and watch the newly dropped lambs, so that weak ones may be helped to suck. Lambs for early market may be forced by teaching them to suck warm milk from a long-spouted can, with a cloth teat at the end of the spout. They will quickly learn to suck, and relish the milk if new and good. When two or three weeks old, they may be taught to nibble a little fine rye-meal or wheat-shorts. But whatever is given should be little and often.

Maple Sugar.—The maple-sugar crop is a very important one, amounting in value to several million dollars annually. In 1870 there were nearly 30,000,000 pounds of maple sugar, and 1,000,000 gallons of molasses made in the United States. The general quality of the sugar, however, is poor. It is not made with cleanliness or care, and the rough method of tapping the trees with an ax, injures them. The trees should be bored with an auger, not over one inch in diameter, if wooden spouts are used. The best sap-spout is a metal one that needs only a half-inch hole, and has a hook attached to it to hang the pail upon. It is made by C. C. Post, Burlington, Vt. When the sap is gathered free from impurities, and boiled carefully, the value of the sugar is doubled.

Poultry.—Eggs and early chickens may be had now, if the fowls are fed with warm feed, and a warm nesting place is provided. Boiled potatoes, mixed with cracked wheat, given warm, is the best stimulating food. A warm corner of the barn should be provided for a few early brooding hens.

Swine.—Breeding sows should be given a few roots, or extra succulent feed, before farrowing. Young pigs may be forced, as mentioned for lambs; they will learn to drink milk from a shallow pan, if their heads are put down to it a few times. Gentle treatment of stock will be found an immense advantage, when one wants to feed them in this way. Every animal about the farm should be a pet, and should love, and not fear, its owner. It will save much work and trouble, if this is the rule.

Work in the Horticultural Departments.

In view of the fact that the *Agriculturist* is taken in nearly every country of the world, it would be impossible to lay out work for every one everywhere. Indeed, in view of the difficulty of doing this for a limited portion of our own country, we long ago ceased to call these notes a "Calendar," and our new readers will find the title, Hints About Work, to describe their contents. We gather here such matters as the non-professional gardener and novice in farming is likely to need, and though these "hints" have in a general way reference to the season, they are not to be regarded as "sailing directions." If one must work by written formula, he will find the record of the work of one year, in which his failures, as well as his good hits, are noted, of far more value to him in his locality than the most elaborate calendar made by another.

Orchard and Nursery.

Care and attention are constantly required. The careless leaving of a gate open or a fence down may result in great damage to the young trees from the depredations of cattle. While shutting out the stock of others, properly shut in your own.

Mice and Rabbits need to be looked to after light snows. Tramp down the snow around the trees, to head off the mice, and sprinkle blood upon the trunks to keep rabbits away.

Pruning.—If pruning is to be done, attend to it before the buds swell in the least. Never cut out a branch without having a reason for doing it, and also strive to give the trees a low, open head to enable them better to withstand the strong winds, to shade the trunks, and to allow the sun and air to reach all parts of the tree. When the orchard is cultivated, the heads will have to be kept higher to allow the teams to pass under them.

Suckers should be cut off, and as soon as the weather will allow, the ground directly around the trees should be broken up, and the moss and dead bark removed by soft-soap wash.

Manure may be carted to the orchard at this season and spread or placed in heaps. It can be hauled at this season of the year on sleds.

Labels will be needed for newly set trees, and should be prepared beforehand. Large nursery labels are best made out of red cedar; if this wood is not convenient, pine or chestnut will last a few years, but cedar is the cheapest in the end.

Map the Orchard.—Show the boys how to make a correct plan of the orchards and nursery; on this should be indicated the correct position and name of every tree; this will be found the only way to preserve the names where an orchard is planted with several varieties.

Fruit Garden.

Selections of various kinds of fruits for planting out the coming spring should be made early, and ordered in time to set out as soon as the ground will permit. In planting a fruit garden for family use, select to embrace both early and late sorts of each kind. With care in selecting, the season of each fruit may be greatly extended.

Blackberries and Raspberries.—If new settings are to be made in the spring, and plants are not at hand, order at once, as they start so early that they cannot be planted too soon after the ground is open.

Strawberries.—There is now a great variety of strawberries, the plants are remarkably cheap, and every one, rich and poor, should have an abundance. A bed of a few rods in extent will supply a large family, if cultivated properly.

Currants coming soon after the strawberries and raspberries, supply a place held by no other fruit; provide enough bushes to freely supply the table during the season, and for jellies and other uses. New plants are easily raised from cuttings made either in the fall or early spring, and in two or three years these plants will be in abundant bearing, and with proper pruning and manuring may be made to produce fruit of extra size. During mild weather, when the wood is not frozen, prune the bushes and preserve the cuttings in sand in the cellar. The Versailles (red) and White Grape are the most profitable. Every spring a dressing of well-rotted manure should be given, and a thick mulch applied to keep down all weeds.

Gooseberries require the same general cultivation as currants, but need more pruning to give the plants an open head to admit light and air. The American varieties are best, among these, Houghton's and Downing's Seedlings are favorites.

Grapes.—The garden culture of the grape is so simple that it is strange that no more vines are planted. The number of varieties is now large and the experience of others in the neighborhood is the safest guide in selecting. We have given from time to time the various methods of pruning and training the vine. The matter is not difficult, the one thing to bear in mind is that the fruit is produced on the new growth, which will start this year from the buds now on the canes. In pruning, all the buds are cut away, save those needed to form new canes.

Stakes and Trellises may be prepared; locust or red cedar stakes are most durable, while chestnut for horizontal strips is cheap and fairly lasting. If locust is too dear to be used for the whole stake, a strip two and a half or three feet long may be set in the ground, and the rest of the post, made of other wood, be spiked to it. All wood used for the above purposes should be got out of the proper size and shape, stored under cover, and so piled up that the air will have free circulation through and around it. If the parts which are to be placed in the ground are given a thorough soaking in petroleum, they would last much longer, except, perhaps, in the case of locust.

Kitchen Garden.

Whether one has his garden in Georgia or in Canada, he needs a hot-bed, one only will do for a private garden, while the "trucker" needs rows of these and frames. Most plants require about six weeks from the sowing of the seed until the time they are large enough to set in the open ground, and this will serve as a general rule, though not an absolute one. If one wishes very early tomatoes, he takes his plants from the hot-bed, where they were sown, and transplants them to another hot-bed; and so with some others. A position for hot-beds should be selected where there is ample shelter on the north and west sides; also see that they are not placed near buildings which harbor mice, as these pests often destroy an entire sowing of seeds. The frames should be 18 inches high at the back, and 12 inches in front, and wide enough to hold the sash, which is usually 6 x 3 feet; the length of the frame must be governed by the quantity of seeds to be sown. Frames made of inch and a half chestnut plank put together with hooks at the corners, are more durable, and can be stored in a small space when not in use. Where early hot-beds are made, they often require, what is called, "lining," or the application of fresh manure to the outside to keep up the heat.

Cold frames in which cabbage and lettuce plants are kept over winter, require air every day when the weather is not freezing. During storms the snow may be left on the sashes a few days without injury to the plants. In very cold nights the sashes must be covered with mats or shutters.

Seeds.—Whatever seeds are not grown at home, should be ordered from some reliable seed-house, and the sooner this selection is made, the more likely the desired varieties can be had. When left until just before sowing time, there is a liability of not getting what is ordered, as the rarer sorts are usually the ones first sought. The postal laws allow seeds to be sent by mail at very cheap rates, and there is no necessity for planting an inferior kind. Never rely for the main crop upon any novelty, no matter how glowing the catalogue description may be, success may attend such a course, but in nine cases out of ten, it will be otherwise. When seeds are raised at home they ought to be kept in a cool, dry room, where mice will not get at them. Such seeds as beet, carrot, parsnip, and others, may be readily raised in the garden, if care is taken to select only the earliest and finest formed roots as seed bearers. Seeds of cucumbers, squashes, and melons of all sorts are so liable to mix that home-raised seed cannot often be relied upon.

Manure.—Turn the heap when too hot, to prevent burning, and to fine the manure. Sods, muck, and whatever other material is at hand, should be composted in the heap. Save all house-slops and whatever can be turned into manure. For garden purposes manure that has lain a year is best, but as this can seldom be had, every means must be taken to get it into a fine state so that its action may be quick and effective. The refuse of many kinds of factories and mills can be utilized.

Tools must be put in proper order, so that the men will not be delayed when work begins. Duplicates of all the smaller tools should be provided in case of breakage, and also for extra hands which may be employed occasionally. Have all steel points free from rust, and the wood thoroughly coated with crude petroleum. Mark all your tools.

Vegetables stored in the cellar must be looked after, and if the weather is mild, the doors and windows opened during the middle of the day. A ventilator ought to be provided for every root-cellar; it may be six to ten inches square, made of pine or hemlock boards; place in one corner of the building, having the exit under the eaves where snow and rain will not enter; this ventilator will take away the disagreeable exhalations. A wooden slide may be provided to shut and open the ventilator.

Brush and Poles for peas and beans must be cut now if not yet done.

Flower Garden and Lawn.

But little can be done here except to follow the hints of last month. Should the snow be off, the rubbish which was left last fall may be gathered and removed to the manure, or burn heap, as the case may be. If any of the coverings given to half hardy plants have been removed by winds or other means, replace them immediately. Make plans for any improvements which are to be carried out this spring. If new roads or walks are to be made, gravel and other road material may be carted while the teams are not busy.

Trees and Shrubs.—If any are to be planted in the spring, order now, so that they may be on hand as soon as the ground will allow them to be set. Evergreens, with a fair share of deciduous kinds intermixed, make a better appearance than if either was used alone. Never set evergreens so near the house that they will exclude light from the rooms.

Greenhouse and Window Plants.

The plants, both in the house and greenhouse, should now look their best, and this can only be secured with care and attention. The plants must be kept in a growing and healthy condition. Careful ventilation is needed, and a constant watch for the numerous insects which infest all house-plants.

Camellias.—Re-pot, if they need it, when the bloom is over. Use fresh loam, mixed with a small portion of sand, taking care that the earth is pressed down firmly around the roots. Keep in a cool house, and syringe once or twice a week.

Forcing.—Such plants as Astilbe Japonica and Dicentra, and the like, may now be brought from the cellar, and placed in a warm greenhouse, where they will soon show their flower-stalks. Both of the above plants are excellent for forcing.

Greenhouse Shrubs, such as Acacias, Banksias, Daphnes, Oranges, etc., which flower in the early spring, will not usually require watering more than two or three times a week. Give plenty of air, for without it the plants will not produce perfect flowers

Cuttings may be made now of the various soft-wooded plants, which will be needed either for planting the borders in spring, or for exchanges.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Jan. 13th, 1875, and for the corresponding month last year, also for the year ending Dec. 31, 1874:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 d's *this* m'th	324,000	459,000	1,617,000	13,800	57,000	407,000
25 d's *last* m'th	367,000	2,376,000	1,104,000	129,000	307,000	1,312,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 d's *this* m'th	291,000	2,911,000	1,918,000	31,000	251,000	2,105,000
25 d's *last* m'th	360,000	3,001,000	2,315,000	92,000	289,000	1,209,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 days 1874	324,000	459,000	1,617,000	13,800	57,000	407,000
24 days 1873	280,416	2,192,000	279,000	26,000	75,000	573,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 days 1874	291,000	2,911,000	1,918,000	34,000	251,000	2,105,000
24 days 1873	328,000	2,651,000	1,614,000	43,000	289,000	1,410,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,647
Dec. 7, 1874	4,513,896	1,220,973	15,925	168,391	890,899	135,622
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	794,722	135,882
Nov. 10, 1873	1,720,338	3,133,896	22,907	232,942	735,153	82,674

4. *Receipts at head of tide-water at Albany each season to Dec. 1st.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1874	165,200	23,791,500	17,123,200	337,600	3,428,100	3,584,500
1873	153,500	22,761,700	18,552,200	950,260	2,152,000	3,385,900
1872	137,300	11,349,100	29,928,700	474,600	4,518,600	5,696,000
1871	290,700	21,313,400	20,042,300	1,107,900	3,839,400	6,639,400
1870	430,400	17,124,700	4,805,100	587,500	3,984,700	6,167,500

5. *Receipts of Breadstuffs in New York in each of the last six years:*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1874	4,017,207	41,817,215	29,329,000	592,114	2,776,025	10,792,019
1873	3,546,768	33,559,870	24,589,345	992,447	2,448,526	11,235,420
1872	3,030,771	16,229,418	25,292,156	491,563	5,117,351	12,486,318
1871	3,649,045	26,518,360	27,108,156	1,055,621	3,869,123	12,516,966
1870	4,143,998	24,088,742	9,143,478	550,169	5,020,718	9,626,606
1869	3,535,716	23,813,652	11,666,784	357,803	3,007,958	8,747,322

6. *Exports from New York, Jan. 1 to Dec. 31.*

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
1874	2,177,608	34,791,249	19,000,995	641,661	3,560	122,528
1873	1,655,331	27,801,829	15,587,327	1,009,148	19,376	49,710
1872	1,179,050	13,144,956	27,861,000	668,547	22,656	31,180
1871	1,659,755	21,968,643	13,046,570	525,772	98,745	47,310
1870	1,950,234	18,446,035	487,702	92,431	——	28,986
1869	1,582,211	18,240,586	1,637,586	142,542	——	49,393

7. *Comparative Stock of Flour in New York, Jan. 1:*

	1872.	1873.	1874.	1875.
Western and State Flour	330,197	322,124	244,412	261,469
Canada Flour	300	1,800	1,050	100
Southern Flour	25,974	36,700	24,289	15,320
California Flour	100	3,000	——	250
Grand total, bbls.	356,271	363,624	260,751	277,439

8. *Comparative Stock of Grain in New York, Jan. 1:*

	1872.	1873.	1874.	1875.
Wheat, bushels	4,227,181	1,996,984	1,258,600	4,600,711
Corn, bushels	1,439,804	6,125,803	1,272,500	1,146,108
Rye, bushels	573,557	110,854	14,639	111,899
Barley, bushels	565,772	1,211,176	194,400	561,951
Oats, bushels	2,871,586	1,765,699	471,600	1,283,164
Malt, bushels	129,480	258,492	26,530	182,775
Peas, bushels	9,500	9,292	12,470	15,139

CURRENT WHOLESALE PRICES.

	Dec. 12.	Jan. 12.
PRICE OF GOLD	111 5-8	112 3-8
FLOUR—Super to Extra State	$3 70 @ 5 80	$4 00 @ 5 75
Super to Extra Southern	4 80 @ 8 50	4 75 @ 7 25
Extra Western	4 65 @ 8 25	4 60 @ 8 00
Extra Genesee	5 00 @ 7 00	5 00 @ 6 75
Superfine Western	3 70 @ 4 40	4 00 @ 4 50
RYE FLOUR	4 35 @ 5 60	4 00 @ 5 25
CORN-MEAL	4 20 @ 5 00	4 00 @ 4 85
WHEAT—All kinds of White	1 25 @ 1 40	1 25 @ 1 35
All kinds of Red and Amber	1 05 @ 1 30	1 07 @ 1 31
CORN—Yellow	89 @ 94	87½@ 90
Mixed	88 @ 96	86 @ 96
White	89 @ 95	87 @ 89
OATS—Western	67 @ 70	67 @ 71
State	66 @ 70	65 @ 71
RYE	92 @ 98	93 @ 96
BARLEY	1 25 @ 1 65	1 25 @ 1 60
HAY—Bale, ℔ 100 lbs	55 @ 95	55 @ 95
STRAW, ℔ 100 lbs	40 @ 65	45 @ 65
COTTON—Middlings, ℔ lb	11⅜@ 11¾	15½@ 15⅝
HOPS—Crop of 1874, ℔ lb	35 @ 50	37 @ 50
FEATHERS—Live Geese, ℔ lb	35 @ 65	35 @ 65
SEED—Clover, ℔ lb	9¾@ 10	10¼@ 10⅝
Timothy, ℔ bushel	2 75 @ 2 85	2 75 @ 2 85
Flax, ℔ bushel	2 15 @ 2 20	2 05 @ 2 10
SUGAR—Refin'g & Grocery ℔ lb	6¼@ 9¾	6 @ 9¼
MOLASSES, Cuba, ℔ gal	32 @ 45	Nominal.
New Orleans, ℔ gal	55 @ 65½	58 @ 67
COFFEE—Rio Gold	17 @ 19½	17⅜@ 20½
TOBACCO, Kentucky, &c., ℔ lb	9 @ 25	9 @ 25
Seed Leaf, ℔ lb	8 @ 60	8 @ 60
WOOL, Domestic Fleece, ℔ lb	28 @ 65	28 @ 65
Domestic, pulled, ℔ lb	27 @ 55	27 @ 55
California, clip	16 @ 38	16 @ 37½
TALLOW, ℔ lb	8⅛@ 8¾	8½@ 9
OIL-CAKE—℔ ton	43 75 @46 00	43 50 @47 00
PORK—Mess, ℔ barrel	20 62½@20 75	20 00 @20 50
Prime Mess, ℔ barrel	19 50 @20 50	18 75 @19 50
BEEF—Plain mess	9 50 @11 00	9 50 @10 50
LARD, in tres. & barrels, ℔ lb	13½@ 14¼	13½@ 14¼
BUTTER—State, ℔ lb	25 @ 45	25 @ 45
Western, ℔ lb	18 @ 35	18 @ 35
CHEESE	6 @ 16	6 @ 16¼
BEANS—℔ bushel	1 60 @ 2 70	1 60 @ 1 70
PEAS—Canada, free, ℔ bu	1 25 @ 1 33	1 25 @ 1 35
EGGS—Fresh, ℔ dozen	21 @ 30	29 @ 33
POULTRY—Fowls	10 @ 15	10 @ 18
Turkeys—℔ lb	6 @ 15	10 @ 17
Geese, ℔ pair	1 37 @ 2 50	1 00 @ 2 25
Ducks, ℔ pair	50 @ 80	50 @ 1 00
PIGEONS, ℔ dozen	2 25 @ 2 50	— @ —
WOODCOCK, ℔ pair	50 @ 65	— @ —
GROUSE, ℔ pair	40 @ 75	50 @ 65
PARTRIDGES, ℔ pair	50 @ 75	40 @ 65
VENISON, ℔ lb	10 @ 16	10 @ 16
WILD DUCKS, ℔ pair	80 @ 1 75	40 @ 1 75
WILD TURKEYS, ℔ lb	— @ —	15 @ 20
QUAIL, ℔ dozen	90 @ 1 50	90 @ 2 00
HARES, ℔ pair	50 @ 75	50 @ 50
RABBITS, per pair	35 @ 40	30 @ 40
TURNIPS ℔ bbl	1 00 @ 1 25	1 00 @ 1 25
CABBAGES—℔ 100	3 50 @15 00	4 00 @ 7 50
ONIONS—℔ bbl	2 25 @ 3 00	2 25 @ 3 00
POTATOES—℔ bbl	1 75 @ 2 50	1 62 @ 2 25
SWEET POTATOES—℔ bbl	3 00 @ 3 25	3 00 @ 4 00
BROOM-CORN	9 @ 14	9 @ 15
GRAPES, ℔ lb	3 @ 10	8 @ 9
APPLES—℔ barrel	1 00 @ 2 25	1 00 @ 2 25
CRANBERRIES—℔ bbl	2 25 @10 00	5 00 @10 00
GREEN PEAS, new, ℔ bushel	1 65 @ 2 00	1 85 @ 1 90
SQUASH, ℔ bbl	1 25 @ 1 75	— @ —
CAULIFLOWERS, ℔ dozen	1 50 @ 5 00	— @ —
HORSE RADISH, per bbl	5 00 @10 00	5 00 @10 00
PEPPERS, per 100	50 @ 1 00	— @ —
CELERY, ℔ dozen	— @ —	1 00 @ 1 50

Gold has been up to 113, and down to 111¼, closing January 12th, at 112⅜ as against 111⅛ on December 12th.... Produce movements have shown less animation. Receipts and sales of Breadstuffs have been on a restricted scale, and values have been generally depressed. There has been less inquiry from export buyers, checked, in part, by the scarcity of ocean freight room. Toward the close, rather more demand has been noted at the ruling figures, chiefly for shipping grades of Flour, No. 2 Spring and Amber Winter Wheat, new mixed Corn, Canada West Barley, and mixed Oats, on a steadier basis as to values....Provisions have been in fairly active demand—hog products attracting more attention from speculative and export buyers—and closing more firmly ....Cotton has been quite freely dealt in, largely on speculative account, at advanced prices....Wool has been more sought after, and quoted stronger in price. The stock of domestic Wool in this market on the 1st inst., comprised 7,217,000 lbs. (as against 4,559,000 lbs. a year ago), including of Domestic Fleece, 1,494,000 lbs.; Pulled, 410,000 lbs.; Tub washed and Scoured, 106,000 lbs.; Texas, 1,207,000 lbs.; California and Oregon Spring, 1,987,000 lbs.; California and Oregon Fall, 1,927,000 lbs.; California and Oregon Pulled, 23,000 lbs.; Colorado, 20,000 lbs.; Georgia and Lake, 43,000 lbs....Hops, Hay, Straw, and Tobacco, have been held with more confidence, though not active....Seeds have shown more firmness, with a better demand noted for Clover, both Western and State.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
Dec. 21	8,546	84	1,074	18,685	40,949	69,338
Dec. 28	6,547	77	688	19,050	39,559	66,521
Jan. 4	7,416	47	518	13,715	19,386	41,112
Jan. 11	7,299	110	817	23,562	35,011	66,629
Total for 4 Weeks	29,808	318	3,097	75,442	134,935	243,600
do. *for prev. 5 Weeks*	41,272	351	6,346	136,732	247,412	432,113

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	7,452	79	774	18,860	33,734
do. do. *last Month*	8,254	70	1,269	23,346	49,442
do. do. *prev's Month*	9,817	59	1,770	29,87	42,177

Beef Cattle.—As compared with the supply for 1873, that of 1874 shows an increase of 11,289 beeves, although a decrease occurred in all other classes of stock. In looking back over the business of the past year, the most noticeable facts are the falling off in quality of the stock offered here, and the higher rates paid for fat stock; but chiefly the unprofitable character of the business of the butchers, which has caused numerous and heavy failures. Commission men have lost at least $300,000, by reason of these failures. For the past month business has been generally active, with only slight fluctuations in values. The closing business showed a gain over the prices of the week previous, with an active market. Native steers ranged from 9½c. for poor @ 14½c. ℔ lb for premium beasts, to dress 55 to 60 lbs. ℔ gross cwt. Texans sold for 9 cents, to dress 54 lbs., and a lot of yearling heifers brought 8½c. ℔ lb. to dress 54 lbs. ℔ cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
Dec. 21	8 @15½c.	10½@11½c.	11 c.
Dec. 28	8 @11½c.	10½@11½c.	11½c.
Jan. 4	7¾@11 c.	10½@11½c.	11 c.
Jan. 11	8 @11½c.	10½@11½c.	11 c.

Milch Cows.—The market for cows has been without change, with a brisk demand. Choice fresh milkers sold quickly for $50@$90 per head. Springers were not wanted.....**Calves.**—There has been a steady demand for good veals, and the market may be called active at 7@11c. ℔ lb. for poor to good. Grassers are selling at $7@$12 per head. 36 yearlings sold for $18@$18.75 per head.....**Sheep and Lambs.** A large business has been done in sheep, without change in prices. Poor to good sheep sold at the close at 5½@7½c. ℔ lb., and a lot of mixed extra sheep and lambs at 8½c. ℔ lb. .. **Swine.**—There is nothing new to notice in regard to swine. The market has been steady, and closes with sales of live hogs at 7½c. ℔ lb. for 160 lb. Ohios, and dressed at 8¼@8⅝c. for Western, and 8½@9c. ℔ lb. for City.

N. Y. Live Stock Trade for 1874.

Beef Cattle.—Total reported receipts in '74...454,000
do. do. do. '73...443,000
do. do. do. '72...425,000
do. do. do. [illegible]...381,000

Average Weekly Receipts during 1874.....8,730

Average prices ℔ lb for the net weight of the dressed carcasses, ranged in Jan. 10¼@11c., Feb. 10¼@10½c., Mar. 10⅞@11½c., April 11@10½c., May 11½@11c., June 11½@12@11½c., July 11@11½c., August 11½@11c., Sept. 10½@10½c., Oct. 10@10½@9½c., Nov. 9½@10c., Dec. 10@11½c. These prices are for good qualities; extras run higher, and lower grades much under these figures.

Of these cattle about 260,000 arrived at the Jersey cattle yards, 30,000 at the Weehawken yards, and 160,000 at the One-hundreth street yards. They were credited to the following States: Illinois 230,000, Texas 75,000, Kentucky 32,000, Missouri 30,000, Ohio 25,000, Virginia 14,000, N. Y. 13,500, Indiana 12,500, Colorado 12,500, Iowa 6,000, Michigan 1,400, Kansas 1,100, Canada 850, Pennsylvania 400, with smaller lots from N. J., Md., and Neb. Doubtless Illinois gets credit for some cattle merely brought through that State, and Texas for some gathered in the Indian Territory, etc.

Milch Cows.—Reported receipts for the year, 3,700, or about 70 a week.

Veal Calves.—Receipts for the year about 100,000, or about 2,000 a week ranging from 600 a week in Jan. and Feb., to 3,000@4,400 in May and June.

Sheep and Lambs.—Receipts for the year about 1,200,000, or 23,000 a week, ranging from 10,000 a week in May to near 30,000 in Aug. and Sept. The prices ℔ lb live weight for good sheep, ranged from 7c. to 9c. between Jan. 1st and May 15th; and for shorn sheep 5½@6½c. from June to Dec., and 7c. in December.

Live Hogs.—Receipts for the year about 1,800,000, or 35,000 a week, ranging from 20,000 to 30,000 a week in winter and midsummer, to 40,000 and 50,000 in November and December. Prices ℔ lb live weight 5@6c. the first six months, 7@7½c. in July, Aug. and Sept.; 6½@7c. Oct. 1 to Nov. 15; 7½@7½c. in Nov. and Dec. The weekly receipts of live hogs in the N. Y. markets have ranged about as follows: 1869, 6,000; 1870, 17,000; 1871, 25,000; 1872, 37,000; 1873, 38,000; 1874, 34,000.

To be Had without Money.—There will be found upon our Premium List (see page 73) a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but a little *well directed effort*. Among these are: **Beautiful Silver-Plated Articles—Fine Table-Cutlery—Gold Pens with Silver Cases—Children's Carriages, Swings, etc.—Watches—Pianos—Melodeons—Pocket-Knives—Guns—Cultivators—Sewing, Knitting, and Washing Machines—Books, etc., etc.**—Read all of page 73, and see how easy you can obtain one or more of these good and desirable articles.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it*. Money sent in the above three methods is safe against loss.

☞ N.B.—The New Postage Law.—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription*. Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our Western Office.—Our friends in the West are reminded that we have an office at Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* are taken there, and sample copies of the paper and chromo are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

Busy—Busy—Busy.—Those in charge of the Premium Department in this office have been wonderfully busy, for over a month past, in sending off a very large stock of the splendid articles offered in the Publisher's Illustrated Premium List. (If any reader has failed to get a copy of that extra sheet, send for it without delay.) The **15,000** men, women, and children, who have received these various premiums, have been delighted with them in almost all cases. **February** is a capital season for a multitude of others to get, free, their choice out of a large variety of first-rate useful articles. You, reader, may as well be one of the fortunate recipients of these premiums, and do it this month. See page 73, and also read over the Illustrated Premium Supplement—sending for it if you have not a copy at hand.

Changes and Improvements.—No doubt that to many constant readers this issue of the paper will wear a slightly unfamiliar look. If they try to find why this is, the most that they will discover is that the different departments are not in precisely the same places in which they have been accustomed to see them. Change is of but little use unless it brings improvement, and in this case we think the improvement very material. Formerly each department was within a set boundary, but now while each has more reading matter than ever before, and the Boys and Girls columns twice as much, they are so arranged that they can be made larger or smaller, to meet the need of each month. In certain months in the year we are pressed for room for advertisements, but we could not formerly add a single leaf to a number without so increasing the weight that the subscribers would be charged double postage. Now that postage is paid here and by the pound, we can add as we please, and in arranging so that, any amount of advertising can be accommodated, we have been able to give more room to reading matter, and thus every one is benefitted. The newness of the mechanical arrangement will wear off with a single month, and each reader will have very much more than we have ever before given.

Tim Bunker, Esq.—Those who have read the *Agriculturist* these many years, have of late felt the loss of the teachings of the Hookertown Squire. Though the same pen has given them good articles in another form, they have not recognized him, and have often asked for Tim Bunker. The old gentleman has been a great traveler of late years, and now that he has once more quietly settled down, we have reason to hope that his letter in the present number is but a renewal of his former series. To our newer readers, those who only now make the acquaintance of Squire Bunker, we can say that he is one of the best farmers in the country, and that, under his quaint way of putting things, there is always a great deal of sound practical sense. And we may add just here, that the collected "Tim Bunker Papers," published by the Orange Judd Co., (See Book List,) are not only entertaining reading, but contain the most solid sugar-coated instruction, and every farmer boy, and every farmer man too, will be profited as well as amused by reading the book, and ought to do it.

B. K. Bliss & Sons' Potato Prizes.—Last spring these enterprising seedsmen made the very liberal offer of $1,500 in prizes for the largest yield of potatoes grown from seed purchased of them. Of this amount $750 was for the largest yield from one pound of seed, and $750 for the largest yield from one quarter of an acre. A committee of three was appointed to decide upon and award the prizes. They made their report in December last, from which we are only able to give the names of the winners of first prizes in each class. For the largest quantity of Extra Early Vermont, from one pound of seed: 1st prize of $100 to A. K. Titus, Wilmington, Vt., yield, 708 lbs. For the largest quantity of Compton's Surprise from one pound: 1st prize of $100, to P. C. Wood, Esther, Ill., yield, 900 lbs. For the largest quantity of Brownell's Beauty from one pound: 1st prize of $100, to H. C. Pearson, Pitcairn, N. Y., yield, 1,018 lbs. For the largest quantity of Extra Early Vermont, grown on one-quarter acre: 1st prize of $100, to D. Steck, Hughesville, Pa., yield, 6,247 lbs. For the largest quantity of Compton's Surprise on one-quarter acre: 1st prize of $100, to Mrs. M. A. Royce, Home, East Tenn., yield, 7,350 lbs. For largest quantity of Brownell's Beauty on one-quarter acre: 1st prize of $100, to A. Rose, Penn Yan, N. Y., yield, 8,830 lbs.

A Pigeon Show.—The National Columbarian Society, whose first show last year was such a success, will hold its second exhibition in New York City, on the 25th inst. The Secretary is L. Burlingame, 14 Murray street, who will furnish prize lists.

Aid for Kansas.—We are requested to state that women and children's clothing and money will be needed for some months yet in Kansas. Members of Granges that desire to assist their brethren in Kansas, may communicate direct with John G. Otis, State Agent of the Patrons of Husbandry, W. P. Popenoe, or Halstead Johnson, Topeka, Kansas.

That "GRAND BAZAAR."—We have before spoken of the assortment of goods, wares, seeds, implements, animals, books, etc., etc., etc., arrayed in our advertising columns, as a "Grand Bazaar," where the reader is introduced directly to a very great variety of articles brought together by a multitude of dealers, all of whom are believed to be men who will do what they promise. (Those in special charge of that department are instructed not only to shut out quacks, medical or other nostrums, etc., but to admit no advertiser whom they would not be willing themselves to send an order to with cash in advance, if necessary.) This department is a great convenience to our hundreds of thousands of readers scattered all over this country, and in many other lands. It will pay them to carefully examine all the advertisements, for many business hints and suggestions will thus be gathered. They will also find what is for sale, and where. The present Mail facilities for cheap carriage of seeds and many other articles gives almost equal advantage to the remotest dweller in the distant territories, and those near populous centers. We Introduce our Readers to these Dealers; they invite you to examine their offerings, to send for their circulars, etc. When writing to them, please let them know you belong to the great *American Agriculturist* family, and you may expect and will receive good treatment.

SUNDRY HUMBUGS.—Last month we gave, especially for the benefit of the many new friends who make our acquaintance with the new year, an outline sketch of the *Humbug* family, with indications of some of the more prominent genera and species. We might in that article have discussed the geographical distribution of humbugs, for they spread from the point where they originate—usually from east to west, but not always, at a rate of progression which is interesting to those who are obliged to observe them. As one who goes from a city to some distant and secluded village finds that the fashions in the village are just what were in vogue in the city two or three years ago, so our humbug files of to-day show that Salt Lake City and the mining towns of Colorado and Nevada are being infested by the same humbugs which but a few years before were making New York and Chicago the scene of their operations. Requests come, as heretofore, to expose this or that person who the writer thinks is engaging in some swindle. It is very easy to write to us

"SHOW HIM UP,"

and it would be equally easy for us to act upon this request, but that is not the way in which these columns are conducted. While we take much responsibility in protecting the public from loss by exposing frauds, we take also the greatest care that no innocent person shall be injured. It is only those who pursue a systematic and persistent course of fraud whose portraits are regarded as worthy a place here....Some of our correspondents think we are too lenient with the

REAL ESTATE AGENTS

of whom they have complained. This is one of those cases in which, while we have no doubt that deceit is practiced by the holding out of extravagant promises, we have no actual proof that fraud has been committed. We have, some months ago, given extracts from the letters of these real estate chaps, and left our readers to draw their own conclusions. The plan of operations is this. You, the reader, advertise a farm or other property for sale: in all probability you will receive a letter from one of these New York concerns *guaranteeing* to sell your property before a given date, for a commission of 2½ per cent, *but* for preliminary advertising and other expenses, they wish you to remit $10 or $5, as the case may be. The complaints made are that the agents get the $5 or $10 and do not sell the property. The strange part in all this is, that anybody can be so innocent as to believe that they would. An agent can no more guarantee the sale of real estate than he can the drawing of a lottery ticket, and the very fact that one promises the impossible should deter all sensible people from trusting him... A cold climate does not seem very favorable to the growth of humbugs, but we now and then get one from in Canada. This time it is a remarkable sale of

FLASH JEWELRY AND OTHER GOODS,

on the old plans of "anything on this board for a shilling," owing to "financial embarrassments," "great depression of business," and all that, "an immense quantity of the choicest articles of European manufacture," have been sent to Durand, James & Co., Montreal, for sale at the uniform price of $2.75 currency, and 25 cents for postage and packing. "Coupons" or tickets, each enumerating some article are indiscriminately mixed, and one by paying 25 cents (or 5 for $1) can get a coupon telling him what he can buy "for his $3." Lovely little bit of machinery. Charming Durand, James & Co. Silly, stupid fools that get caught in such a network....The area of semi-official lottery gambling has extended, and now we have the

TEXAS GIFT CONCERT,

which has all the wonderful inducements to invest in this form of gambling that we have become wearied of reading in the circulars of that lovely perennial thing, the Kentucky Library concern. Texas has made such wonderful strides in improvement within a few years, that we regret to see her follow the example of the older States for evil as well as for good.

UNUSUAL WAYS OF SELLING THINGS

are always to be looked upon with distrust. If one has a good article to sell, he requires no machinery to help get rid of it. Paper is one of the commonest articles of commerce, and that of a given quality has a regular price as much as coal, flour, or iron, and any unusual methods of disposing of it are to be regarded with caution: if one advertises a staple like paper in an expensive manner and sends out circulars, the cost of doing this will be paid by the purchaser in the increased price provided he ever gets his paper. We say, "provided he

gets his paper," as we have had for some time various complaints as to a concern in New York city which calls itself a "paper company," and which has advertised largely through the country for agents to sell paper which can be furnished to consumers at one-third less than the usual prices. For 50 cents they propose to send applicants a box of samples actually worth $1. Some of our correspondents say that they have sent 50 cents and have received in return only a few sheets of paper, with a promise to send more when it was ready. Others have received no paper, but a circular stating that the stock of boxes of samples was exhausted, but that "the 50 cents already paid for samples will be allowed on $10 or $20 orders." The complaints are so many, and the answers look so suspicious, that we advise this paper concern to satisfy the demands of those who have sent them money, or we shall be obliged to mention the names of the parties concerned. In the meantime we repeat our advice, to buy paper, pork, and other goods in the regular way....

LIGHT FROM UTAH

has reached us as to the ways of the non-explosive powder man. The fellow who by a pinch of his powder not only renders dangerous oils non-explosive, but likewise prevents the chimney from breaking, and for all we know, puts the baby to sleep at the same time, has beamed upon the Salt Lakeians. And even an editor has been found green enough to endorse it. We have long ago stated on general principles that this was some inert substance, but we now take it all back. It is by no means a valueless substance, indeed so important is it that the world could hardly get along without it, and as to its being inert, it is possessed of the most wonderful powers. One portion of it is a metal, as brilliant as silver, and so rare that but few persons have seen it, while another portion of it is one of the most powerful and corrosive of all things, and will dissolve gold itself, and as it can create grand explosions, why should it not prevent them? This remarkable compound is called by chemists the *sodium chloride*, or *chloride of sodium*, and though ordinary people know it as common salt, it is not the less useful and wonderful. We have long wished to see this much talked of non-exploding compound, or as it is now called "Coal Oil Rectifier," and are thankful to the Utah friend who forwarded a small sample just large enough for an analysis, which showed this much talked of stuff to be only common salt colored blue, apparently with ultramarine. The rascality of this precious humbug does not so much lie in the fact that people pay a large sum for a very cheap article, but that it leads to a false notion of security. And by trusting to the supposed efficacy of this stuff may be induced to burn unsafe oils. Recollect, that *nothing* added to a dangerous oil can by any possibility make it safe to use.

THE WALL-STREET GAMBLERS

evidently find persons who have so little use for their money as to trust it to them, as they appear to get enough with which to pay for their rather extensive advertising. The "high-toned" and "leading" newspapers of the city allow these gamblers to spread their nets in their columns, but we are not so much surprised at that as at the agricultural papers, which of all others, should be the farmer's true friends, and protect him from all hidden dangers, which publish the tempting offers of these fellows of 200 per cent a month on money invested with them. We have mentioned this matter several times, but yet friends write to us to know if it is safe to send money to these gamblers. Never play any game you do not understand....The trade in

INDECENT BOOKS AND PICTURES

is evidently seriously interfered with by the activity of the officers of the Post-Office Department, as we know, by the fewer complaints that come to us, and the large amounts confiscated by the officials. Still some of these scoundrels manage to elude the officers for a while. One gentleman sends us a most objectionable affair sent to his little girl, whose name has somehow been obtained, and the officers inform us that the amount of obscene literature that finds its way to the boarding-schools and academies for youth of both sexes is perfectly appalling. A young man sends us the circular of a firm which wishes him to act as their agent, and asks us if they are reliable men to deal with. Young man, don't you know better than to come to us for such information? Don't you know that there is not a book or picture offered in these circulars that you would dare to offer openly? If you can understand the meaning of language you should see that these works are of the most pernicious kind, and that it would be a moral crime for you to be the "agent" for introducing them anywhere. We are glad to say that Mr. A. Comstock, upon whom one of these obscene book fellows made a murderous assault, is again out and attending to his duties; his face bears a fearful scar, but it will not prevent him from ferreting out such chaps with more than his former energy. The would-be murderer was convicted under the name of Charles Conroy, though he had 17 other names under which he operated. Through some legal technicality he could be imprisoned for only two years and be fined $500....Another business seriously interfered with by the postal regulations is

COUNTERFEIT MONEY OR QUEER.

We do not now get more than one-tenth of these schemes that we did a few years ago. The method of conducting this swindle has been fully given in former articles. One new name in this business is L. H. Walker, who impudently gives the St. Nicholas Hotel, N. Y., as his address.

IN MEDICAL MATTERS

we have some letters that are really pathetic, showing how eagerly afflicted persons catch at any hope of relief, and how readily those who recklessly promise relief can find a hearing. A proper physician will promise nothing, while a quack will not only promise, but assert his "no cure no pay" claim. If a patient can hope for no relief in his case, a medical man will tell him so, while the quack will delude the poor sufferer with hopes of a cure, at least so long as the money lasts. Notwithstanding our often repeated statement that we can not advise any one to have anything to do with any advertising doctor whatever, we continually get letters from those who have been so impressed by the plausible circulars of these fellows that they write us asking if they could not safely employ this or that one of them. One lady in New Jersey has invested a good sum with a New York consumption curer, and asks if she shall continue to invest. The good unselfish soul says, not for her own sake, but "for the sake of my children." It seems unkind, it is so easy to say *yes*, for us to answer, good madam, any man who will offer to prescribe for you from seeing your photograph, is a man to be avoided.... A gentleman in Pennsylvania is much interested in a deaf friend, of whom the physicians say he has but little hope of hearing, "and he has consulted several of the best doctors." It is likely that there is some organic defect that no medicine in the world can touch, but this gentleman asks our opinion of a Mrs. Legget, to which his friend wishes to apply. Mrs. Legget's circular is before us, and it is the same old story, she gives the prescription, but as the druggist may not have the herbs, or they may not have them in purity, she, benevolent soul, who does not want to make money, she says she don't, will put up the prescription for $5. "Chee-Ochee, Prairie foxhoof, Chee monchons, Seed of Prairie Wort," and other such nonsense enter into the prescriptions of this feminine quack....Perhaps of all forms assumed by medical quackery, none are more pernicious than those which assume to be

"UNIVERSITIES," "INSTITUTES," AND "ASSOCIATIONS,"

for under these respectable disguises the worst charlatans gain the ear and confidence (and we may add, the money) of those who would never think of employing an ordinary quack. A great many intelligent people do not know that no respectable physician ever advertises his cures, or ever puts out circulars and pamphlets setting forth his ability to treat particular diseases, or proposes to sell medicines of any kind. Such persons can not conceive it possible that an ignorant quack can have the effrontery to call himself a "University" or an "Institute," and, if they think at all about it, think that the laws would prevent an imposition of this kind. There are in New York and other large cities, quack shops under these high-sounding names, which issue circulars of the vilest kind, which are distributed at the street corners and on cars, to young and old; these are full of matters that children should know nothing of, and they are often advertisements of treatises even more pernicious than the circulars themselves. Some of these so-called "institutes" are regular black-mailing shops. A young man who has, or imagines he has, some private trouble, makes a fatal mistake when he applies to some of these "institutes"; his name, address, and circumstances being ascertained, he is laid under contribution for a certain sum per week, which he pays under fear of a threatened exposure of his case to his parents or employers. A gentleman whose statement can be relied upon, informs us that he has seen such a blackmail list at one of these places, and that the "doctor" received a handsome weekly income thus extorted through the fears of young clerks, students, and others....On other occasions we have referred to some publications of the

CLINTON MEDICAL INSTITUTE,

which are of so vile a character that they were excluded from the mail by the authorities. As Mr. Anthony Comstock, the special agent of the Post-Office Department was chiefly instrumental in putting a stop to the circulation of these documents, the "Institute," which is one James Bryan, calling himself "Doctor," entered a suit against Mr. Comstock in one of the New York courts for attempted blackmail. This Bryan claimed that his institute was an incorporated body, and that there were associated with him in its management, "four of the most celebrated physicians." The testimony given at the trial showed that no other than Bryan could be found or had anything to do with it. Bryan, on his own examination, could give no satisfactory information as to his eminent associates who are claimed in the circulars to be in attendance, he could not recollect the name of the college at which he received his diploma, and made out a very poor story altogether. Judge Donohue in his decision in regard to this "Institute," said: "It seems to me a fair result to reach from the facts presented by the proofs, that the so-called Clinton Institute is a myth, and that the persons whose names are used by it as 'Doctors' are also myths."

Will it Pay?—An intelligent man, having special experience in some department of work, devotes his energies for months, and even years, to collecting information, and after a time he writes out all he can collect of hints, suggestions, etc. Some publisher puts these in type, and prints them in the form of a book, and sells it at a moderate price per copy. Is it likely that any person engaged in the occupation of which this book treats, can fail of getting useful hints out of its pages that will directly or indirectly benefit him many times the cost of the book, even in dollars and cents, aside from the development of thought it will bring? We think there is hardly a book on any practical subject so poor that it will not pay to read it. Certainly there is no good book that will not pay. The value of an acre of land put into a farmer's library, will help the owner to get much more off from the rest of his acres; and every son and daughter who reads books and papers devoted to their calling will respect it more, think more, and be happier. At this leisure season, let every farmer and every mechanic add at least one book to his stock, and read it this winter. It will help during the next busy season. The advertising columns tell of a great variety of books, which the mail will bring to one's door at a mere trifling cost, and nearly all books are sent post-paid by publishers. Look at the various announcements, and select at least one source of new thoughts.

Heavy Weights in Cattle.—Under this head the National Live Stock Journal has some remarks casting doubt upon the estimated weights of the fat cattle raised by Mr. Ayrault, of Poughkeepsie, portraits of which appeared in the *Agriculturist* of December last. The criticism is so clearly erroneous, and the imputation of misrepresentation so uncalled for, that it is only out of justice to Mr. Ayrault that we notice it. The weights of these cattle were only approximately given for the reason that there is a standing challenge for a sum of $500 that the steer and the heifer are the heaviest animals of their kind in the world. On this account "it was said" their weights were not far from 4,000 and 3,000 pounds respectively. Otherwise their exact weights upon the scales would have been given. The authority as to the weight of the Ketton ox is Bell's History of the Improved Short-horn; besides this there are others. All of these state the weight of the ox to be 270 stones (3,780 lbs) or nearly *thirty-four hundred weight*. But then a *hundred weight* in England is 112 lbs. The charge of encouraging misrepresentation is unjust.

Dyspeptics.—Starvation Treatment.—The readers of the *Agriculturist* are aware that its columns are very free from medical advice, as we hold that more harm than good is done by publishing remedies for this and that disease, and encouraging persons to dose themselves. On the other hand we think that hints upon the preservation of health may very properly come within our scope. There is nothing more common than to meet persons who have, or think they have, Dyspepsia. It would be strange, when we consider the general activity of our people, their over-worked brains and under-fed bodies, if dyspepsia were not a common complaint. At all hours of the day many thousands of people are moving on the various railroad routes, and all of them, if they eat at all, must do it at a railroad speed: the trains make up lost time by taking it out of the all too few minutes allowed for refreshments, and travelers have to bolt in the ill-prepared food in the most hurried manner. But it is not the present purpose to point out the various causes of dyspepsia, but to refer to the popular idea that dyspeptics should not eat this or that, if anything at all. True, if the stomach is over-loaded, it should be allowed to rest—but the practice of altogether abstaining from food by dyspeptics is wrong. *Strength comes only from food*, and a weak stomach needs food to make it strong—and this should be good nourishing food, and not grits, bran, and such articles alone. A beefsteak cooked rare and *thoroughly chewed*, with good bread, and baked or mashed potatoes, is better for a dyspeptic than all the "bitters" and other medical nostrums ever invented. If the teeth are imperfect, and can not thoroughly perform their duty, then the meat should be cut very fine to the better prepare it. The "bitters" may produce a more immediate pleasant sensation, but good food will tone up and strengthen the stomach for the

next meal, which should be taken after the preceding has been digested, and the stomach allowed to rest a little, but before it is weakened by starvation again. If one is very weary, and the stomach weakened by long delay in eating, a light meal should be taken; a heavy meal will overload it in its exhausted condition. Good palatable food, in fair quantity, eaten at regular times, and with sufficient moderation to secure its proper mastication, is vastly preferable to all medical nostrums, and to fasting and starvation. The writer speaks from knowledge gained by experience and a study of the principles involved—a knowledge, which, had it been acquired and appreciated 40 years ago, would have saved him some suffering at least, and have made him worth much more now for the remainder of his life's work.

A "Mystery" Explained.

More than one reader has written to us to the following effect: "From what I know of the cost of good paper, of fine engravings, well printed, etc., I can well understand that at the low price of the *American Agriculturist* there can be little, if any, profit. It is then a mystery to me how the publishers can offer such premiums as they do to those who obtain clubs of subscribers, unless these articles are cheap affairs or poor selections." There is no "mystery" about it that we are unwilling to explain. **First,** the money received for advertisements properly pays for the premiums; the premiums help to increase the circulation, and more circulation brings in more advertising money. **Second,** manufacturers well know the carefulness of this journal in commending nothing but the best, and that to be recommended in this journal is the highest testimonial they can have. Hence, most manufacturers are ready to give the publishers extraordinary terms for such articles as they give as premiums, and generally to accept part payment in advertising. This enables the publishers to pay two or three times as much in premium articles as they could possibly pay in cash, while the articles given *are just as good as money* to the recipients, or even better, for they come with a guarantee of their quality. So it is a good thing all round, for the manufacturers, the publishers, and especially for those who receive the articles, as they get good things for using the little time and effort required to raise a club. Multitudes of them have written their great satisfaction on receiving these articles, and more than **15,000** persons have received them. Still further, it is a good thing for the subscribers in the premium club, as they are induced to supply themselves with good reading, and the club raiser saves them all trouble of remitting the subscriptions. **Finally,** let us repeat that every article in the premium list is warranted *first rate.* (Hundreds of second-class articles are pushed upon us for our premium list every year, but all such are rejected.) Our own reputation is at stake, and even were we so disposed, we cannot afford to give any but good articles. **Lastly,** we ask all our readers to look over the Illustrated Premium List and descriptions. (If any one has failed to receive a copy, please write at once for one, which will be sent free.) There are many good things that any one can get without cost during these winter months. You want them, and we like to give them, and you can easily get them.

Those "10-Cent Postage" Complaints and Other Matters.

Constantly, for five months at least, the publishers have announced, that on and after January 1, 1875, *they* must prepay the postage on all papers mailed. Subscribers had previously paid 12 cents a year. The Publishers will have to pay 10 to 12 cents, according to the number of extra pages added during the year, as they pay by the gross weight. Still many old subscribers, and some new ones, partly from long habit, send us in only the old subscription rates, without the postage. To such a postal-card is forwarded, stating the omission, and occasionally this is complained of rather bitterly as a "small matter." So it is, in individual cases—"only a dime"—but to the Publishers it is a large affair—a matter of $10,000 on a hundred thousand subscribers! Some publishers of high-priced papers and magazines make considerable display of liberality in offering to prepay all postage. They can easily afford it, having a large margin of *profit* to take it out of, but with this Journal it is quite different. It has **44** pages of more than double the size of ordinary magazines, and is printed on firm, sized paper, of as fine a quality as ordinary writing-paper. The paper is made of strong rags, not of straw and clay that fall to pieces in use. The engravings are finely cut, and are not rapidly thrown off ink-daubs, but are slowly, carefully, and expensively printed. The preparation of the reading matter is expensive, because in the wide range of topics, many first-class men are required to investigate. A few lines are often the result of many hours of investigation, and multitudes of articles and items are left out, because laborious investigation has thus decided. There are not half a dozen monthly journals or magazines in this country, even of those sold at $4 and $5 a year, and but very few weekly papers, which are got up with so great care, investigation, labor, and expense, as are put upon the *American Agriculturist*, notwithstanding its low popular rates of $1.60 a year, including postage, while it is supplied to large clubs even as low as $1.10 a year, including postage. The reader will, therefore, readily see the necessity the Publishers are under to require the postage to be paid by the subscriber, or in other words, of increasing the price enough to cover the cost of paying this. The annual terms (*postage included*) are: One to three subscribers, $1.60 each; four to nine subscribers, $1.35 each; ten to nineteen subscribers, $1.30 each; twenty *or more* subscribers, $1.10 each.

A Catalogue, a Book, and a History.—Among the numerous florist's catalogues which have been recently received, is one from Long Brothers, Florists, Buffalo, N. Y. The catalogue of this establishment last year, showed much originality in its arrangement, and the one issued the present season, is not a mere copy of the preceding. One of the brothers, Mr. E. A. Long, has also issued a neat little work of 88 pages, called "The Home Florist," which gives descriptions of popular flowers and the methods of cultivating them, with a great deal of matter useful to the novice in flower gardening, all for the small sum of 30 cts.; an examination of the work shows that the author has a practical knowledge of plants and their culture, and the ability to impart this knowledge to others in a clear and instructive manner. Both the catalogue and the "Home Florist," are specimens of good and careful work. A number of months ago the Editor received from Long Brothers, a letter, stating that they were young men, trying to make their way as florists, and asking advice upon various matters relating to their business. The young men were perfect strangers, but they seemed to have so much confidence in our opinion, and expressed themselves so frankly, that the correspondence which grew out of this beginning, was of a much more friendly character than that which relates to business matters usually is. It at length appeared that these gentlemen attribute not only their success as florists, but the fact of their being florists at all, largely, if not entirely to the *Agriculturist*, and that while we were looking at their correspondence as that of business men, whose enthusiasm and freshness made it more than usually interesting, they felt all the while that they were conferring with an old friend and benefactor. Mr. E. A. Long, who though not the oldest of the four brothers, was the one who first became a florist, gives us a brief history of their establishment, which we here publish for several reasons, but mainly for the encouragement of other young men. Not to induce young men to become florists, for it is not desirable that they should, unless their tastes strongly lead them in that direction, so much as to induce them to become *something*. These young men, the oldest not get 28, have built up a handsome and growing business out of nothing save what is within the reach of every young man who reads this, provided he has within himself the necessary will and energy. It is so frequently that we receive letters in which the writer attributes his success in some special undertaking, or even his whole success in life, to the teachings of the *Agriculturist*, that we have perhaps come to look upon them as matters of course. It is certainly most gratifying to know that our work in the world is for good, and while we have received the testimonials to this fact, with much inward satisfaction, we have regarded them as confidential. This of Mr. Long comes with full permission to publish, and we give it not only for the pleasant light in which it places our own labors, but as showing what energetic and persevering young men these brothers are, and how well they deserve the success which has thus far attended them. We have another reason for publishing this letter. When the panic of the fall of 1873, deprived papers which had heretofore given premiums, of the ability to do so, they all at once became distressingly virtuous, and at the opening of 1874, discovered that the whole system of premium giving was wrong; their paper was so good that people needed no inducements to work for it, and most of these at the beginning of 1875, hold the same exalted views, though we notice that their journals do not improve in value. Of course, these publishers have a right to manage their business in their own way, but we do not think it fair in them to sneer at those who choose to do differently. The *Agriculturist* many years ago, inaugurated the paying of premiums to those who worked to extend its circulation, and has increased the number and value of these from year to year. We should not have continued to do this, had we not found some good came of it; aside from the benefit it has been to ourselves, we know that hundreds if not thousands of young men in the country, date their success in life from working for these premiums.

But we will allow Mr. Long to speak for himself: "I formerly canvassed for the *Agriculturist*, and remember having one year sent in a club of 64 names, gathered in our neighborhood (I was 17 then, I think), with somewhat smaller clubs in preceding and following years. My first premium was "Worcester's Unabridged," next a gold pen and silver case, next $40 worth of excellent books from your list; after that a few implements, other books, etc. This was about ten years ago, and I shall never be able to fully ascertain the great advantage of the early business schooling I derived from devoting my spare evening time mostly in soliciting subscribers to your journal. Besides this I was able to gratify a desire for information on horticultural art and science by procuring the best of books on these subjects without cost, at a time when I was without means for purchasing, and I can not tell how valuable this has been to me since I subsequently engaged in business as a florist. About eight years ago, as a then successful amateur florist, I commenced the cultivation of greenhouse plants in one end of a propagating house, built by my father for nursery purposes at Williamsville, ten miles from Buffalo. My purchases in the first year to stock "my greenhouse" amounted to less than $15 worth. From the first I was successful, both pecuniarily and otherwise, although almost wholly dependent for my guidance on my "premium" books, the *Agriculturist*, and the knowledge I had been and was constantly gaining by experience. I increased my greenhouse stock considerably in the next few years, and about this time made arrangements for spending, and did spend, the better part of a year in Mr. Peter Henderson's employ. While I was there I gave directions by mail to some younger brothers at home, who had become somewhat initiated in working with me, for propagating and managing my stock. After I returned home, and ever since, my brothers and myself, with very limited capital, have been pushing the florist business with eagerness. A little over two years ago we located ourselves at Buffalo. This was a capital move, as Buffalo, like hundreds of other places, had been poorly supplied with florists. We at first issued a price-list, and then a catalogue, which we have done now for six years. We have acquired something of a shipping trade, and on the whole are astonished at our general success. Four years ago (1870) at Williamsville (marketing in Buffalo), my sales of florist plants amounted to $150. In 1871, also at W., $700. In 1872, at W., with some shipping trade, $2,200. Last year (1873) at Buffalo, $6,700, and for the present year (1874) our sales of florist stock will reach near $11,000. All this time I and my three brothers have done nearly all our own work. It is with a deep sense of gratitude that I say, that without a doubt our attainments in our business are almost wholly due to my having interested myself in the advantages you offered to the young as well as old, in devoting their spare time to working for the reliable, old *American Agriculturist*."

Gardening for the Prophets.—Deacon —— is a ruling elder in one of the leading churches of ——. Being on a visit to Chicago, he was commissioned to get a work on the Prophets for the use of the Sunday-school in which he was a teacher. On the Sunday in question the Deacon was absent, but was represented by his eight-year old boy, of whom the superintendent asked if his father had brought that work on the Prophets; the youngster promptly replied yes! I know he has, and he has been reading it all day. I know it is the book, for I saw on it "Gardening for the Prophets," by Peter Henderson. The story spread and was rather hard on the Deacon, who had heretofore, as a Deacon should, set his voice against all secular reading on the Sabbath.

The Catalogues.—Our friends are slow in getting out their catalogues, or at least slow in sending them. A list of those received was made up at the usual time, but by the time this was in type, others came to hand in such numbers, that it was not possible to get them all into the present number. We therefore defer the whole list until next month. We would therefore suggest to those who wish to have their catalogues enumerated, to send them along early. We try to avoid all partiality in this matter, and it is not our fault if the catalogue of a dealer fails to appear.

Basket Items continued on page 73.

The Horse's Foot.

Few persons who own and use horses, are aware how delicate an organ is the horse's foot. Not many blacksmiths or farriers, upon whom almost solely depends the preservation of the foot, are acquainted with its structure, and its sensitiveness.

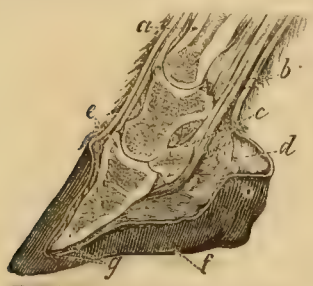


Fig. 1.—LONGITUDINAL SECTION.

To most people, horse-shoers included, the hoof is a piece of insensible horn, that may be cut and hacked, rasped and burned, bound with iron and nails, or bruised and pounded upon stones and rough roads with impunity. This want of knowledge results in frequent and incurable ills to valuable horses, involving suffering to patient beasts, and much pecuniary loss to their owners. The horse's hoof is a complicated structure of bones, cartilages, and sinews, wrapped in the most sensitive and delicate membranes, bound together in a mass with fibrous tissue, and abundantly supplied with blood-vessels and nerves; all of these are enclosed in a thin case or box of horn, the crust of the hoof; with which, however, all these are intimately connected, and interwoven by a system of several hundred acutely sensitive laminæ, or thin leaves or plates. Hence an injury or blow given to the outer crust of the hoof conveys a sensation to every interior part of the foot, and thus impresses the whole nervous system of the animal. A clearer idea of the character of the horse's foot, may be gathered from the illustrations, taken from a recent work, "Chauveau's Comparative Anatomy of the Domestic Animals."

Fig. 2.—HORIZONTAL SECTION.

Figure 1 is a section from above downwards through the foot, in which at *a*, is seen the lower portion of the first phalanx; at *b*, the second phalanx; *c*, the navicular bone; *d*, the plantar cushion; *e*, the third phalanx; *f*, the plantar surface of the hoof, and at *g*, the sensitive membrane of the third phalanx. Figure 2 is a section across the foot, and shows at *a*, the toe of the hoof; at *b*, the thickness of the walls; *c*, the sensitive laminæ or leaves, which connect the wall of the hoof with the inner nervous and vascular system; *d*, is the insertion of the tendon by which the toe of the hoof is extended, (the *extensor pedis*); *e*, the *os pedis*, third phalanx, or pedal bone; *f*, the navicular bone; *g*, the wings of the pedal bone; *h*, the lateral cartilages; *i*, the tendon which retracts the foot, (*flexor pedis* tendon); *j*, the plantar cushion; *k*, the bars or the inflexion of the wall of the hoof; *l*, the horny frog.

Fig. 3.—LOWER FACE.

Figure 3 shows the lower surface of the foot, after the outer crust of the hoof with the sole has been removed. At *a*, is the heel; *b*, the coronary cushion; *c*, part of the plantar cushion; *d*, portion of the frog; *e*, laminæ or leaves of the bars, and *f*, the velvety tissue of the sole. Our purpose is not to explain the offices of these organs, but simply to exhibit and enumerate them to enforce the necessity of a thorough study of the horse's foot, in order that proper and intelligent care may be taken of it. In nothing is educated skill more necessary than in shoeing. It must be remembered that the foot is continualy growing from within outwards, to repair the constant loss of the hoof by wear; that nature has provided for every need that may arise from the natural wear of the hoof; that the outer surface of the hoof is of dense, tough, elastic, insensible material—horn—although it is intimately connected with a most sensitive interior, and that the real purpose of shoeing is to provide against an excessive wear of the crust, occasioned by contact with stones and rough surfaces upon roads, to which the animal in its wild state is a stranger. The shoe, in fact, should be an artificial crust to the hoof, and while it should be no less, it need be no more. It should not change the position of the foot with regard to the ground, nor elevate it so that the frog can not come in contact with the ground. It should not bind the foot with a rigid ring of iron, so that the elastic crust can not spread when the weight of the horse falls upon the elastic cushion within, and thus prevent the exercise of one of its most useful functions, viz., that of a spring to relieve the pressure, and prevent jars which would otherwise be conveyed directly to the bony column of the limb. These are some of the rudimentary principles of a rational system of horse-shoeing. Upon the form of the shoe greatly depends whether these principles can be carried into practice or not. The Goodenough shoe, of which fig. 4 is an illustration, is designed for this rational system of shoeing. It is light, having no surplus weight to encumber the foot. The foot surface is rolled with a bevel, by which the shoe bears only upon the wall or crust of the hoof, entirely relieving the sole from pressure. The ground surface has also a bevel by which the inner part of the shoe is brought to a thin edge. The outer portion has a thick edge cut into calks, by which secure foot-hold is obtained, without elevating the foot and without changing the natural bearing of its surface. To apply the shoe to a horse's foot, no preparation is needed further than to level the surface of the wall of the hoof, to get an even bearing, and to remove unnecessary worn-out horn. The frog under this system is never touched by the farrier's knife. It comes to the ground as it naturally should, and performs its proper office in supporting the inner organs of the foot, as a spring or cushion. No greater recommendation of this form of shoe, or of the system of shoeing here advocated, can be furnished, than that several of the largest horse-railroads of New York and Brooklyn use it, and have used it for years with satisfaction and success; there can be no severer test than this. Several farmers of our acquaintance, whose judgment is unquestioned, have long used this shoe and continue to use it.

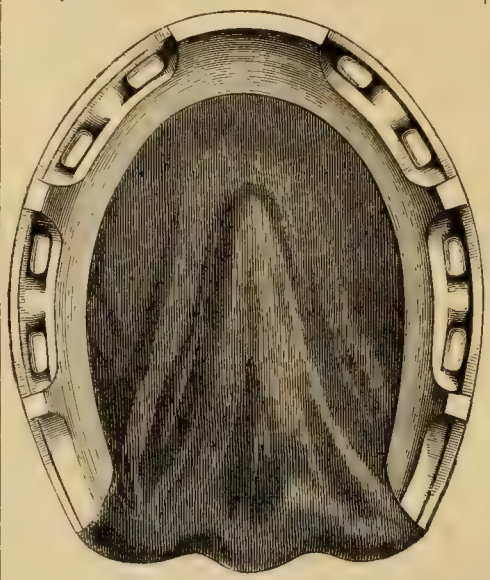


Fig. 4.—FOOT WITH SHOE.

A New Squash.—The Butman.

Several years ago, in a correspondence with our friend Jas. J. H. Gregory, of Marblehead, Mass., we had some jocular remark about titles; he stated that he did not care about M.D., L.L.D., and all the rest, it was sufficient honor for him to be known as "The introducer of the Hubbard Squash." If honors are in proportion to the merit of one's deeds, then it is a high honor to have introduced the Hubbard, for its good results were felt all over the country, and the whole people have enjoyed an article of food, vastly better in every respect, than anything of its kind they ever had before. But Mr. Gregory is not one to repose on his laurels, as good as the Hubbard was, he showed us that the Marblehead was better, and now he comes with the Butman, which is—shall we say it?—better than either or both. Some weeks ago there came to our office a box, containing numerous halves of squashes. Coming from New England, where they draw their poultry for market, we admired the forethought, which eviscerated the squashes—*probably* to keep them from spoiling on the way. (N. B.—Mr. G. is a *seeds*man.) These squashes, or parts thereof, were distributed to several for trial. The trial was an impartial one, and the unanimous verdict was: guilty—of being the best squash the jury ever tried. We tested it alone, and in comparison with the Hubbard, and deliberately pronounce it the best squash we have ever eaten—dry, fine, sweet, delicious. The engraving shows the shape of the Butman, which is much like that of the Hubbard, and it is said to be similar to that in productiveness; it however differs in color, it being of a bright green, intermingled with white; some of the specimens might be described as white, mottled with green; in external color it is very distinct and striking; it has the thick shell of the Hubbard, and is thick-fleshed, the flesh being a very lively light salmon color. Mr. Gregory says that it keeps equal to the Hubbard, but is in its prime from October to January. This variety was originated by Mr. Clarendon Butman, of Maine, who produced it by crossing the Hubbard with a Japanese variety, and by several years of careful selection and crossing, he has succeeded in establishing a distinct variety, in which the good qualities are permanently fixed. According to Mr. G. all our standard varieties of squash originated abroad, and this is the first instance in which a purely American variety of squash has been produced. We congratulate Mr. Butman upon his success, and at the same time give our sympathy to Mr. Gregory, as he has slight chance of introducing another squash that shall be better than all that preceded it.

BUTMAN SQUASH.

Connecticut Farmers' Convention.

An important gathering of the farmers of Connecticut, under the auspices of the State Board of Agriculture, was held at Woodstock, Dec. 15-18, at the invitation of the Agricultural Society of that town. The leading farmers of the State were well represented by nearly a hundred earnest, enterprising cultivators. Morning, afternoon, and evening lectures or reports were arranged, and each lecture and report was followed by a lively discussion, in which those present well filled up the time with conversation, asking and giving information. Dairy topics, as milk, butter, cheese, milking value of different breeds of cows, kinds and quantities of feed, occupied most of the time. Well prepared and generally instructive papers were read by Messrs. T. S. Gold, N. Hart, Dr. E. L. Sturtevant, Hon. X. A. Willard, of Little Falls, N. Y., and Hon. F. D. Douglass, of Whitney, Vt., while discussions on dairy topics were led by Messrs. S. M. Wells, Wm. Clift, and Hon. Albert Day, and participated in by many others. Prof. W. O. Atwater gave an extended and interesting lecture on late European experiments on the relation of fodder and milk production. There was a fine exhibition of apples, and a paper on the Orchards of Connecticut, with suggestions on raising and keeping fruit, by Mr. P. M. Augur, Pomologist of the State Board of Agriculture. The Committee on Agricultural Experiment Stations reported their efforts toward getting a Legislative appropriation, and were desired to continue their efforts until they achieved success. Several hundred dollars were subscribed to make a beginning, as noted elsewhere. We trust the Board will issue in pamphlet form, and adapted to general circulation, a pretty full resumé of the information brought out during the meeting, and stereotype it, so that they can multiply copies, and put a small charge upon them, when others outside the State can feel free to send for them to the Secretary, T. S. Gold, at West Cornwall, Ct..... By invitation of the farmers of Windham County, the writer spent most of the winter of 1852-3 in several towns there, lecturing and holding agricultural meetings nearly every night for a dozen weeks, and it was gratifying to meet at Woodstock several of his auditors and pupils in agricultural science, some of whom he had not seen personally in the intervening 21 years, though he has held converse with them from time to time through the columns of this paper. It was gratifying also to learn that the spirit of investigation, then developed, has not died out, but that the farmers of Old Windham are as wide-awake to improvement as ever.

Cotton Seed as a Fertilizer.

Cotton seed is valuable for the ammonia, phosphoric acid, and potash it contains. Applied alone it is less effective as a fertilizer, than in compost; the most economical method of utilizing it is as feed for stock, the manure from which has a very high value. Until the system of cultivation generally followed in the Southern States, is greatly changed, the whole value of the cotton seed can not be attained. The plan of composting must therefore be taken as the next best method of using it. There are several ways of doing this. The seed may be thrown into the stable and trodden by mules, and made to mingle with their droppings. As it is removed from beneath the animals, it should be thrown into heaps along with all the trash and weeds from the cotton and corn fields, and such other refuse vegetable matter as can be gathered. These heaps will rapidly heat and ferment, and will need frequent turning to prevent burning or "fire fang." A mixture of swamp earth will help to prevent injury from this cause. Some labor in the preparation of this compost, will be amply repaid, as it will be worth, if well made, at least $15 to $20 per ton, taking guano as the standard. The quality of the compost will be further improved by adding some good phosphate or plaster, or both. The difference in the value of raw seed, and that composted in the way here described, is illustrated by some experiments made last season, by a planter in South Carolina. Raw cotton seed at the rate of 35 bu. per acre, were put into the drill, upon soil of medium fertility, and covered in February. Early in April the beds were made up, and cotton was planted. With good culture the crop yielded was 100 pounds of seed cotton per acre. Upon another piece of ground, 125 bushels of raw seed were scattered broadcast, the land was plowed, bedded, and planted at the usual time. Only 70 pounds of seed cotton per acre resulted. Another piece was manured with a compost equivalent to 20 bushels of cotton seed, 50 bushels of cow pen manure, and 125 lbs. of phosphate of lime per acre. The yield was 1,000 lbs. of seed cotton per acre. From the absence of any regular system of stock feeding, in connection with farming or planting in the Southern States, it is impossible to determine exactly what would be the result, if cotton seed were used as a feeding material in connection with hay or straw, corn-fodder, or such roots as could be readily grown in the South, as beets for instance. But as the refuse cake from the cotton seed oil manufactories is largely used in England as cattle feed, for the express purpose of enriching the manure, with profit, there is no doubt that it might be profitably used here in the same way. That by the use of some capital in the purchase of lean stock from the West, and the growth of fodder crops upon a considerable portion of the land now devoted to cotton, a sufficient supply of rich manure could be procured, whereby an equal product of cotton to the present, could be raised upon the remainder of the land, can hardly be doubted. The condition of Southern farmers is not favorable for experimenting. Their whole attention is necessarily given to making crops for profit. To experiment successfully, requires time and some expenditure that may give no present return. But in no part of the country is improvement in agriculture more needed, than in the Southern States, and in none is a richer reward offered for improvement. Agricultural Colleges have opportunities for experiments, and we can not conceive of a more hopeful experiment than such a one as this, to be undertaken by some one of the Southern Agricultural Colleges.

Experiment Stations.

Their Value and Importance to American Cultivators.—A Beginning to be Made Here.

We call special attention to the articles of Prof. Atwater in this and the previous number of the *American Agriculturist*. The subject is of the highest importance. Science can be of immense service to the farming interest of our country. There is a good deal of prejudice against science among practical men, nor is this surprising. It is but a few years since the first successful attempt was made to call science to the aid or the farmer. Enthusiastic novices, encouraged by the first gleams of light, were carried beyond the bounds of reasonable expectation, and claimed too much. Charlatans seized upon a few striking discoveries, and perverted them to personal ends, and by frauds in fertilizers, and in other ways, gave unlearned men good reason to stand aloof, and even to cry out "humbug."

Meanwhile careful, honest investigators have kept quietly at work. During a score years or more past, valuable discoveries have been accumulating, and to-day science is a positive and valuable help for the cultivator of the soil. Prof. Atwater's future contributions will give us some of the results obtained by our careful, painstaking German brother farmers, that will be of great use to us. But we want to have investigations here. We need Experiment Stations, not only to reduce to our use the knowledge obtained abroad, but to make *new* investigations, specially adapted to our soil, climate, and condition. We don't want merely the puny political machine run at Washington in the interest of personal favorites of the administration of whatever political party happens to be in power. We want Experiment Stations among farmers, managed solely in their interest by men of integrity and common sense, having thorough scientific knowledge and practical skill as well. Such men are scarce as yet, but a demand will bring them out. Connecticut is favored with two such men—Prof. S. W. Johnson, author of the well-known books "How Crops Grow" and "How Crops Feed," is one of the first living authorities in Agricultural Chemistry, and as Chemist to the State Board of Agriculture has been more than any other man a pioneer in introducing agricultural science in this country. Prof. W. O. Atwater, formerly a pupil of Prof. Johnson, has more recently devoted much time to investigations in Europe, and he is doing good service in bringing before our farmers the information there gathered.

At the recent Connecticut State Farmers' Convention, referred to elsewhere, the committee appointed at the previous annual convention, to secure from the Legislature an appropriation for an Experiment Station, reported progress, and it is confidently hoped that the next Legislature will provide for an annual grant of the necessary funds. But the farmers present, feeling the need of work immediately, determined to make a beginning themselves at once. We have only space to say that several hundred dollars were promptly raised at the Convention, and it is expected that this sum will be largely increased. The use of the large, new, and convenient laboratory of the Wesleyan University was offered free of charge, as were the services of Prof. Atwater, with the advice and aid of Prof. Johnson in superintending the work. With competent assistance, as much as the funds subscribed will allow, the work of analyzing fertilizers will be commenced immediately. A very important addition to the good work done in this line by the Board of Agriculture, through its chemist, will thus be made. It is proposed not only that the fertilizers offered for sale in the State shall be tested, as is done by the Board of Agriculture, but also that analyses shall be made for farmers and others, who wish to know the value of the fertilizers with which they are dealing. With the aid of the subscription referred to, it will probably be practicable to make analyses for $2.00, that would otherwise cost $20.00 or more. Other investigations of interest to agriculture will be made, and information will be given freely, so far as the time of the chemists will permit.

By chemical investigations of manures, and by experiments on the nutrition and growth of animals and plants, hundreds of thousands of dollars are saved to European farmers every year, while the higher benefit of this, as of every other form of true science, is priceless. To this most worthy effort in our own country, we most earnestly wish the most abundant success.

Sheep-Raising in Virginia.

BY THOMAS WALSH, ALEXANDRIA, VA.

[An article in the *Agriculturist* for November last upon sheep-raising in Virginia, has called forth a letter from Thomas Walsh, Esq., of Burgundy Stock Farm, near Alexandria, which should have been published in December, but was crowded out. The article referred to was by one of our associates, who was in Virginia on a tour of observation, and was based upon information gathered a long distance from Mr. Walsh's farm. We gladly give place to Mr. W.'s note, as it confirms our view that sheep-husbandry in some form is the great reliance for the restoration of a now rather desolate region. We have no doubt that Mr. Walsh's farm, within two miles of a good market, is much cheaper at $80 an acre than the old fields 50 miles inland, at a tithe of the money. But Virginians, or those who seek new homes in the old State, cannot all live in the valley of the Potomac. The people who are already scattered through the poorer sections of Fairfax, Fauquier, Prince William, Culpepper, and Orange Counties, must live, and if they are not able to buy sheep at $3 or $4 each, it would

probably be better for them to buy sheep at half the price and worth but half the money, rather than buy nothing at all, and keep on in the old routine. In so broad a district as that lying between Alexandria and Gordonsville, there are not only different grades of sheep, but different prices for those of the same intrinsic value. Lands are higher, and the cost of production is greater, near good markets than in remote districts. The estimate of $1.50 for sheep in the season when second-rate animals are cheapest, was made by our informant for the benefit of that class who have small capital and little enterprise. It is a great thing for a land-poor, discouraged, farmer, to show him that there is a way out of his difficulties, and that he can hope to improve his condition. It is not likely to mislead men of larger intelligence and capital, who know that the best stock at any reasonable price pays much better than inferior stock at the market price. Mr. Walsh is right in choosing the best lands and the best stock at high prices near a good market. The poor fellow in the back country may not be altogether wrong, who buys a poorer article at low prices, and tries his hand at sheep-husbandry. We cannot speak too highly in commendation of Cotswold rams in a flock of mutton sheep.—ED.]

Mr. Walsh writes: "I saw in the November number of the *Agriculturist* an article on sheep-raising in Virginia, and knowing the influence and wide circulation of your paper, I thought it might lead some person astray in regard to land and sheep in that part of Virginia. First, you can not buy any land for five or six dollars an acre worth owning. It would be cheaper to pay twenty-five. The writer paid $80 an acre on the same road, two miles from Alexandria, and bought 281 acres, and he would not sell it to-day for twice the amount. Next, no man can buy any sheep worth having for $1.50 a head one hundred miles from here. I tried it, and came back to Alexandria and paid $3.50. It is far better to pay $3 or $4 for good young ewes than to buy poor old ones for $1.50 or $2. The lambs will be better, and when the lambs are sold it will be easy to fatten the ewes. I paid $4 each this fall for 70 ewes, and I consider them cheap. Good ewes will have lambs early, and there is where the profit lies. Good lambs sell in Washington in the spring for $5 to $6 at ten weeks to three months old. I got $6 for lambs the first of last April, at nine weeks old. I have two fine Cotswold rams, and also a Leicester ram. They are fine; I paid $30 apiece for them. As the writer says, I believe sheep-raising is the only thing that will pay at present. Unless you have a very large flock, say 500 or 600 sheep, it will not pay to have a shepherd. I have 110, and take care of them mostly myself. In winter I feed principally bran and ship stuff, occasionally corn. In early fall I sow a field of rye, so as to have it for my ewes and lambs early in the spring. I keep my sheep out every day in the winter, unless the snow is deep. At nights I keep them in open sheds. This is my third year with sheep, and I have lost none so far, by dogs. Sheep do well here; I sell the old ones in May and June, and buy afresh in the fall. Being a new farmer, and a resident of Brooklyn for 21 years before I came here, your valuable paper has been the means of giving me these last five years a great deal of useful information which I needed, and am thankful for.

Farming Without Manure.

The remarkable results obtained by two English farmers, Messrs. Prout and Middleditch, were recorded and commented upon by the various English papers, especially those devoted to agriculture. In December last, we gave under the above title, an abstract of the first accounts which came to hand, but journals received later, showed that the article upon which our comments were based, was not as full as it should have been, and we were about to make a revised statement of the case, when there came to hand a letter from J. R. Dodge, Esq., the capable statistician of the Department of Agriculture, who will, we trust, excuse us for making use of a portion of a private letter, for the good of the public. Mr. Dodge says: "Last season I visited the farm of Mr. Prout, at Sawbridgeworth, Essex, saw his more than three hundred acres of growing wheat, and the piles of superphosphate and ground bone that are anually applied to the soil, and took abstracts of statistics from his record of the farm, which corroborated the statements from his own lips, that his average annual expense for fertilizers, was fifty shillings, or $12.50 per acre, for 4 or 5 previous years. It is true that he does not use manure of cattle to any great extent, as he keeps none for fattening, but has a few horses and pairs of oxen for hauling, and all light cultivating not done by steam. He plows eight or nine inches in depth, stirs the soil six or seven inches deeper, cultivates his crop once or twice in the spring by horse-plowing, and afterwards weeds by hand.

"The reported gross income of the present year, $23,141, is about the average shown by his books for the four previous years, and while the annual cost of fertilizers is about $5,000, the net profit averages $6,000, after allowing eight per cent on £50 per acre in lieu of rent.

"The wheat crop is always disposed of by auction, grain and straw, as it stands in the field. This practice, disregarding turnip culture and cattle feeding, is indeed anomalous in England, but Mr. Prout is willing to continue it while it brings annually 35 to 65 bushels of wheat per acre, and a net profit of $12 to $15."

Ogden Farm Papers.—No. 60.

BY GEORGE E. WARING, JR.,

I have long thought that a part of one paper of this series might be advantageously directed to some of the details of the sanitary arrangement of farm-houses as to any other winter topic, and surely no other is of nearly so great importance. Health, so far as it is affected by proper arrangements for disposing of refuse or organic matter, is more dependent upon the direct intervention of individual householders in the country than in towns. On a farm, the circumstances and conditions under which the family live are entirely, or almost entirely under the control of the farmer himself, while in towns every one is more or less affected by the circumstances attending his neighbor's mode of life; therefore, while calamities befalling those in towns may be to a certain extent beyond their individual control, much of the death and disease from which the farmer's family suffers, results from causes for which he alone is responsible, and which he might have removed. Nothing is more common than for every death and every case of sickness to be ascribed to the workings of an inscrutable Providence. By far the greater proportion of the affliction to which mankind is subject, comes not by the act of God, but by the act of man himself. The range of what is called preventable diseases is now known to be very wide, and all such diseases it should be the first duty of man to prevent. Much of this—that to which I especially wish to ask attention—is not only preventable disease, but is disease that is called into existence only by the act or by the neglect of man, and it is not too much to say, (after the thorough investigations of the subject that have been made by sanitary authorities), that there has never been a case of typhoid fever that was not almost directly caused by the ignorance, or by the criminal neglect of some person whose duty it should have been to prevent it. Such disease never comes without cause, and its cause is never anything else than organic poisoning arising from decaying organic matter, or from the spread of the infection directly from a patient suffering from the disease.

Typhoid fever has many names, all of which are suggestive of its origin. It is called "drain-fever," "sewer-fever," "cess-pool fever," "foul-well-fever," "night-soil-fever," etc., and it is *never* caused except by the introduction into the system of the germs of the disease—which can originate only through the operation of neglected organic wastes, or by communication through the lungs or stomach by means of foul air or foul water, or of germs arising from the persons or from the excreta of typhoid patients. So far as its contagion is concerned, ample ventilation of the sick-room, and the immediate removal or disinfection of the fæces are ample preventives. It is not contagious as small-pox is, but its spread is caused by the action of germs which infect the locality of the patient, and extend more or less widely according to the precautions used to confine it. There is not necessarily the least danger that the disease will attack even the constant attendant of the patient, if proper care is taken. This part of the subject may, perhaps, be left to the control of the physician who has charge of the case; but with the farmer himself must rest the entire responsibility of the *origin* of every *first* case breaking out in his household. This is a certain and thoroughly well-established fact, and there attaches to him the full measure of guilt for every such case. This is a responsibility for which the community should hold him strictly accountable. It would really be as correct to ascribe a red-handed murder to Providence as to attempt in this way to console ourselves for a fatal attack of typhoid fever. We are taught that we shall not cleave our child's skull with an ax, and that if we do, death will surely result, but we are no less absolutely taught that we shall not poison our child's blood with the foul emanations of our house-drains, and with the contamination of our drinking-water wells, lest the same fatal result follow. We may ignorantly load the water with which our families are supplied with lead-poison, and so be without the guilt of intention; or we may ignorantly poison our wells by the infiltration of infected organic matter, and in this case, as in the other, be acquitted of the charge of criminal intent. But in these days, when so much has been published concerning the origin of diseases of this class, however free we may be of all criminal intent, the serious charge of criminal neglect must surely lie at our door.

Now, all this may seem very savage talk to put into a paper intended for the perusal of the intelligent farmers of an enlightened country, but any one who will give attention to the subject, will confess that it is precisely the sort of talk which is most needed, and which, if well heeded, will produce the most beneficial results in every quarter of the country. There are other diseases, resulting some in death and some only in illness and its consequent loss of service, which come more or less under the same head, but typhoid fever is so universally prevalent in country-houses, is so fatal in its effect, and is so readily prevented, that it constitutes the most conspicuous type of its class, and is most entitled to consideration. It may be assumed, without hesitation, that whenever a pronounced case of typhoid breaks out in an isolated country-house, or when any form of low fever occurs, though it may fail to assume a distinct typhoid character, there is in that house, or about it, or in connection with its supply of drinking-water, some accumulation of neglected filth, some pile of rotten vegetables in the cellar, some overflow from a barnyard, some spot of earth saturated with the slops of the kitchen, or some other form of impurity to which the origin of the disease may be distinctly traced. The *spread* of typhoid is very generally occasioned by germs contained in the bowel discharge of fever patients, but the disease is constantly originating itself where no such cause exists, and every first attack is a plain indication that either at home, or in some house at which the patient has visited, one or two things has occurred: (1) there has been an exhalation of poisonous organic gases from a privy-vault, from a kitchen-yard, from a neglected cellar, or from some other source of bad air, which has entered the lungs and planted there the germs of the disease; or (2), either in the food or in the drink of the patient, these germs, originating in the same organic putrescence, have found their way to the stomach. In either case the blood is attacked; the subject may have been sufficiently robust and vigorous, or sufficiently unsusceptible to infection to have avoided a

serious or fatal illness, but in every instance the danger has been incurred, and, when incurred, the risk must be the same as in taking any other form of slow poison. This is not theory, but simply a well established fact demonstrated by long, careful, and frequently repeated investigation. The precise character of typhoid infection, and the exact manner of operation when introduced into the blood, are not known, but that it always originates in the way described, and that it may invariably be prevented by the use of proper sanitary precautions, is absolutely known.

This being the case, it lies perfectly within the province of every farmer, (and if the farmer will not attend to such matters of his own accord, his wife has a way of urging him into it), to remove while it is yet time, any source of infection to which his house may be liable. Vegetables, in any considerable amount, should not be kept in the house cellar, and at least once a week the floor of the cellar should be swept, and every shred of waste vegetables removed. Even when this is done, the cellar should be ventilated by a window or other small opening toward the quarter least exposed to cold winds, (and in summer on every side); the privy, if a privy is used, should be well away from the house, and especially far from the well, unless its contents are received in a tight box, and entirely absorbed by dry earth or ashes, and even then frequently removed; the chamber-slops of the house should *never*, under *any* circumstances, be thrown into the privy vault, nor into a porous cess-pool, from which they can leach into the ground, and through the ground for a long distance into the well, and into and around the foundation of the house; the same disposal of the liquid wastes of the kitchen is desirable, but not so absolutely important. It is, however, important that this should be led by an imperviable drain to a point well away from the house and from the well; swill, and all manner of nondescript refuse material, such as is sloughed off by every household in the ordinary course of its living, should be removed at least daily from the near vicinity of the dwelling, and the vessels in which it accumulates should be frequently cleansed and aired; manure heaps should not be left to ferment and send off their exhalations at a point whence frequent winds waft them toward and into the dwelling, nor should the barnyard be allowed to drain, (either over the surface or through a porous soil,) toward the house or well. If all these precautions are taken, the well will be tolerably safe, and, in most cases, absolutely safe, but if there is any doubt on the point, then let no well-water be drank except after boiling; or the drinking-water of the house may be taken entirely from a filtering cistern, of which the filtering bed is sufficient to hold back all organic matter. If all these points are well attended to, and if the ordinary rules of cleanliness be observed in the household, the members of the family may be considered as safe against attacks of typhoid fever.

I might readily, in this connection, show that in carrying out the various details given above concerning the disposal of household wastes, the farmer would only be consulting his pecuniary interests, by increasing the value of his manure, and the economical use of his kitchen wastes, but I do not propose to weaken the argument by any question of dollars and cents. The fact that by an observance of these simple sanitary rules, one may save those he loves and cherishes, and for whose well-being he is accountable, from the assaults of our most widespread and our most nearly fatal disease, and that by neglecting them, he brings upon his own head the responsibility of their illness, their suffering, and their premature death, ought to be a sufficient appeal to any conscientious, civilized man.

During the last half of the past year our sales of Jerseys were 21 animals, which sold for $4,370, being an average of $208.09; 4 males sold for an average of $78.75, and 17 females for an average of $238.53.

Gen. William S. Tilton, the Deputy Governor of the Soldiers' Home, near Augusta, Me., continues his careful experiments concerning the yield of milk and cream of his herd. During the year ending Oct. 20, 1874, he had 2 Dutch cows, 7 natives, and 9 Jerseys. One of the Dutch cows was farrow, and is not to come in until next May; for this fact due allowance must be made in comparing the record; she gave only about one-half as much as the fresh one. One of the Jerseys was in the same condition, and similar allowance must be made for her. The yield of the whole herd per day, would be 33 per cent greater than it was the preceding year, if the two farrow cows were counted as fresh ones—if the herd had been kept for milk, and not for breeding, they would have given place to fresh cows. Gen. Tilton ascribes the increase of milk to improved feeding last winter, namely: "2 quarts of meal and 2 quarts of bran per day, to each animal, mixed with cut hay, and all steamed together; while the previous winter they had only long hay during the same months, Nov. 1st to April 1st. * * * We had no abortion, so that steamed food may be acquitted of causing that trouble." The summing up of the tabular statement is as follows, for the average of the whole year:

The Dutch were 335 days in milk, producing during this time a daily average of 7.23 pounds; the average percentage of cream was 9.03; the total production of milk was 4.7 times the live weight; the yield of cream per annum was 42 per cent of the live weight of the animals.

The natives averaged 308 days in milk, with a daily product of 19.1 pounds, and 9.82 per cent of cream; they produced 5½ times their live weight in milk, and 52 per cent of their live weight in cream.

The Jerseys were in milk 327 days, producing an average of 13.25 pounds per day, with 16.16 per cent of cream; they produced 4.9 times their weight of milk, and 78 per cent of their live weight of cream.

If others who are so situated that they can make careful experiments, would take the trouble to do so, and to report the results, they would not only benefit the readers of agricultural papers generally, but would find their own practice of feeding, and their selection of animals for the different uses of the dairy, very much modified by the information such a record would give them.

Science Applied to Farming.—II.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

How Science is Saving Money and Increasing the Profits of Farmers—More About European Experiments.

As cattle are ordinarily fed, there is apt to be a waste of some of the nutritive part of the food. American farmers are often in doubt not only as to what materials will, at current prices, make the most economical fodder for their stock, but also in what proportions they should be mixed and fed to secure the greatest benefit. As yet they are without careful and accurate experiments to settle these questions. In the German Experiment Stations, a large number of men, fitted for the work both by the fullest scientific knowledge and by practical skill, devote their whole time to making feeding trials. Farms, stables, cattle, chemical laboratories, assistants, and everything needful are at their disposal. The systematic way these experiments are planned and carried out, and the care used to make them accurate and thorough, would astonish any one who has not looked into the matter.

Take, for instance, an experiment on feeding cows for milk. Of different food materials, what amounts and proportions shall be mixed in the daily ration, to obtain the largest and best yield of milk at the least cost? From the cows in the stable of the Station a number are selected and fed for two or three weeks with clover hay, then during another period with clover and straw, during other periods bran, or meal, or oil-cakes, or turnips, or two or three of these together, are mixed with the hay. The fodder given and the milk obtained in each period are carefully measured, and are also analyzed. Thus the effect of the different kinds and mixtures of food upon the yield of milk is accurately learned. Such an experiment often requires the hard labor of three or four men for as many months in overseeing the work in the stable, and making the analyses in the laboratory. No one can fail to see how valuable must be the application of the results of such experiments to practice. Information, just such as hundreds of thousands of American cultivators want, is obtained at these Stations, and spread abroad among the German farmers. And this is done at a cost extremely small in comparison with the money saved, and still smaller when compared with the increased certainty and enjoyment which they bring to the work of tilling the soil. The average annual expense of one of the German Stations is less than the salary often received for merely nominal services by a single party favorite in this country.

Hundreds of such feeding trials have been made in the European Stations during the last 15 years. They indicate, as a general result, that the dealing out of fodder is not properly a matter of so much hay, or turnips, or meal. It depends rather upon the amounts of starch, sugar, fat, fiber, albuminoids, salts and water, of which the hay, turnips and meal are composed. Chemical analysis tells us that all our common fodder materials contain essentially the same ingredients, but in very different proportions. Again, the animal is nourished only by that part of the food which it digests. The undigested portion passes off as excrement, and is useless, except as manure. A great many feeding trials have been made to determine how much of the starch, fiber, albuminoids, etc., of ordinary food materials are digested by oxen, cows, sheep, and other animals. It is found that unless the ingredients are mixed in proper proportions, only a part of the digestible material will be actually digested, while the rest will be wasted. By such investigations we learn also which of the food ingredients, (as starch, albuminoids, etc.,) are made over into fat, or into muscle or lean meat in the body; also which ones supply the fat (butter) and casein (curd) of the milk; which ones are consumed in producing the heat which keeps the animal warm, and which ones in yielding muscular force or working power. In short, these investigations show how the nutritive value of different fodder materials can be learned from their chemical composition, and in what proportions they should be mixed and fed out to the animals, in order that all the valuable nutritive material will be digested and utilized, and none wasted. But do the farmers in Germany turn these experiments to much practical use?.... I have here a German Farmer's Diary, or "Agricultural Calendar." Tens of thousands of German farmers carry copies of this little work in their pockets, and consider the information condensed between its covers as invaluable. Fifteen pages are devoted to the practical application of such experiments as we have described. First come tables giving the composition of nearly 200 different fodder materials, with directions for calculating their nutritive values. Then come Fodder Tables. These give the amounts of the food ingredients required per 1,000 lbs. live weight by oxen when at rest, and when at work, by milch cows, horses, sheep, etc. Then follow no less than 126 tables of fodder mixtures. These are calculated to contain the different materials in such proportions as to supply the animal's needs, and at the same time to secure the most complete utilization of the food. In this great variety of tables, any farmer can find just the information he needs to guide him in mixing and dealing out to whatever stock he may have to feed, the fodder materials which he may produce upon his farms or buy. And this is all expressed so plainly that he can understand it without any special scientific knowledge. I asked a great many of the farmers in Germany what they thought of these tables. The reply generally was, that it would be vain to follow them blindly, but that as aids in mixing and dealing out fodder they were extremely useful.

The work of these Experiment Stations, then, results in the definite knowledge of the principles

that underlie the right practice of farming. Thus guess-work, and the great waste that it brings, are done away with, and light of inestimable value is thrown upon the doubtful problems of our agriculture.

The *Experiment Stations* belong to the tillers of the soil. The first one was established by some enterprising farmers, aided by agricultural societies, at Moeckern, in Saxony, in 1851. So successful was this, that others soon followed. In 1856 there were 5; in 1861, 15; in 1866, 30; in 1871, 56; and there are now about 70 Experimental Stations in different parts of Europe. The yearly expenses vary from $1,000 to $10,000 each, and are borne in part by the government, in part by agricultural societies, and in part by private individuals.

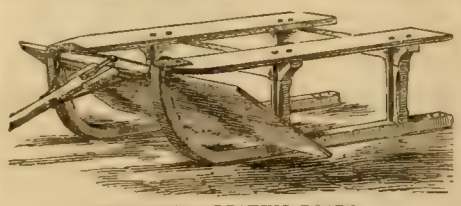
That the European Experiment Stations save directly much more money than they cost, is shown by the willingness with which the farmers themselves unite in supporting them with their influence and their money. And yet this advantage is very slight in comparison with that which results from the interest they awaken in science, and the additions they make to the sum of our knowledge. He who has shared in the labors of the Stations, has seen the enthusiasm of the workers there for the science they are cultivating, has observed the eagerness with which the results of the work are received by the farmers among whom the work is done, has noticed how these results are applied to practice, and has then compared the culture of the soil, the crops raised, and the love of knowledge which exists there, with those where this science is less fostered, will be well persuaded of their value.

Attempts have been made with varying success to establish Experiment Stations in this country. The most promising is the Bussey Institution, of Harvard University. A large number of intelligent farmers in Connecticut, are making a vigorous effort to establish an Experiment Station in that State. The project was started at the annual State Farmers' Convention over a year ago. It has since been brought before the people in public meetings and otherwise, and has met their hearty approval. A bill providing an appropriation of money to establish a Station was presented at the last Legislature, but was deferred until the next session, which convenes next May. Meanwhile the farmers are determined that something shall be done. At the annual Farmers' Convention last December, it was proposed that some investigations be commenced at once. Several hundred dollars were subscribed, with the promise of more, for defraying the expenses. A most essential and fortunate encouragement for the plan was given in an assurance by Mr. Orange Judd, of the *American Agriculturist*, in behalf of the trustees of the Wesleyan University, at Middletown, of the free use for the purpose, of all needful room and appliances in the chemical laboratory, which occupies a large space with abundant conveniences for manipulation, in the magnificent Judd Hall of Natural Science, generously donated by him to the University.

In no country, not even in the best cultivated districts of Germany, is the average intelligence of the cultivators of the soil so great as it is here. Yet, with us, one thing is lacking. We need more system, more definite knowledge, more applied science in our agriculture. We want this much, for the money it will save, more to improve our methods of farming, and most of all for the addition it will make to our knowledge, and the stimulus it will give to our minds. For these, let us have Agricultural Experimental Stations.

Breaking Roads in the Snow.

"S. E. T." sends the following plan of breaking roads after a snow-storm, with a sketch from which an engraving has been made. He uses a common sled, and in front, before the first pair of knees, and between the reve and the runner, as shown in the illustration, he places a wide board, six feet long, or two boards battened together in a sloping direction. After a fall of snow the sled is drawn along the roadway, or wherever a path is desired, and the snow is packed and pressed down smoothly, with-



PLOW FOR BREAKING ROADS.

out leaving any ridges. Our correspondent thinks this a better plan than that of the snow-plow described in the December *American Agriculturist*.

Voices from the Bee Hive.

INTERPRETED BY M. QUINBY.

Although the sting seems to be the only language that many human beings can understand, the indications now are, that some few begin to move on a higher plane. The experiment has been tried of practicing towards us something a little nearer justice; and our response has been most gratifying. Our sting was given us as a means of defense, and it is to be hoped after being kindly treated for a much less time than we have been abused, we shall forget it, or use it so seldom that it will seem useless. Our guardian after studying dilligently, will find it necessary to discard many habits, theories, and impressions already formed; must train himself to avoid all collisions. He must rid himself of the idea that he can take all, and give nothing in return. We desire to be dealt with fairly, and will reciprocate every indulgence to the extent of our power Too many think they lose time by working carefully, when the truth is, it is economy to work slowly, as rash handling rouses our temper, often destroys our lives, and tends to our keeper's loss generally. *Let this truth be repeated until better understood.* Let us tell you how to make a hive to suit *us* much better than many yet offered. When calculating on the advantages of having the walls of the hive of good thickness, and a non-conductor of heat, you must bear in mind that the human body generates heat until a temperature of near 100° is reached. This is maintained until the surrounding atmosphere is colder and reduces it. Clothing surrounds the body, to keep it comfortable, by preventing this heat from passing off too rapidly. A swarm of bees are in a similar condition. Heat enough is generated for our comfort, as long as the hive given us is sufficient to retain it. If the

Fig. 1.—BOTTOM-BOARD.

material of which it is composed, is a non-conductor, and our family is large, and there is no escape for the warmth generated through any hole or crevise, we keep warm enough. A perfect non-conductor we have not yet had. A small family can not generate warmth enough in a cold atmosphere to keep comfortable.

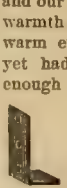


Fig. 3.

When such a family is placed in a hive with thick walls, the rays of the sun do not strike through as quickly as if they were thin, and we are not as much warmed in consequence, by a few hours of sunshine. We recommend material for this hive, only half an inch in thickness. If the warmth of the cluster passes off faster through such, we shall probably be warmed up by the sun's rays quicker, to make up the difference. We shall recommend a part of the hive described in the *American Agriculturist*, in June, 1873, as that constitutes one answering all purposes, for which we, and many of our owners want it. If desired, this hive can at any time be converted into the one referred to. This modification, or part of said hive, can be made almost as cheaply as the box hive. But as many will not recall the one described, a repetition may be necessary.

1st. Get out the bottom board. Let it be 11 inches wide, by about 20 long, and about 1 inch thick. Put cleats on the under side, to prevent warping. Plane the upper side smooth. Get a piece of hoop iron, 11 inches long, ¾ wide; ¾ inch from one edge, make six or eight holes through, to drive nails. Put under the hoop iron a strip of veneering of hard wood, driving nails through this as well as hoop iron. Nail it across about an inch from the end of bottom board. The hoop iron should project over the piece under it, ⅛ of an inch. This will give a space to hook on the frame. The bottom will appear like fig. 1.

Next, get material for frame. Let two pieces be 11 inches long, ¾ inch thick and 1¾ wide, measurments exact. Two pieces, 18¾ inches long, from inch boards, and ⅞ thick. Nail through the shortest pieces into the longest ones, just ¾ inch from both top and bottom, and you have a frame like fig. 2. Nail firmly with finishing nails. Guides for straight combs should be in the top. The frame is held in position by a piece of hoop iron, 3 inches long, bent into an angle like fig. 3. Two holes are made through it to fasten it with nails to the lower corner of one end of the frame, as at *a* fig. 4, and it is ready to hook under the hoop iron on the bottom board, and the frame will stand upright. A small nail dropped in loosely, prevents unhooking. A half dozen will set on the bottom board. A wider board can be made if wanted, to make the hive larger, or two can be joined together. Directly under the center, where the front end of the frame sets on the bottom board, an entrance can be made. Let it be cut out of the bottom board, half an inch in depth, and three-fourths wide, extending four inches under each frame. The sides and top are made of half-inch boards, planed smoothly just

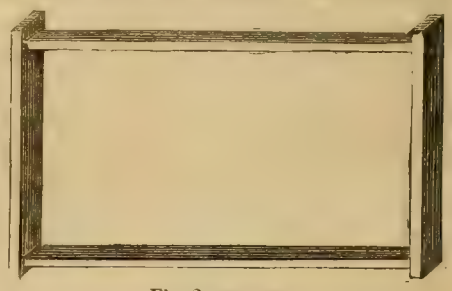


Fig. 2.—FRAME.

the size of frames, with cleats nailed on each end, to prevent warping. Put one on each side, and one on top, and tie together with a stout rubber cord. It will hold every thing snug, and the hive is done. It is convenient for our actual needs. But as our owners may desire surplus honey in boxes, as well as to extract, arrangements may be made for them. Have the bottom board wider than specified above, and a number more frames, according to the strength of the colony. Then make a number of small frames—be sure and have enough. The boards of which they are made, need be only ¼ inch in thickness, and 1¾ in width, and the length just right to make a box when nailed together, 5×6 inches square. Six of these will go in one of the large frames, appearing like fig. 4. If they do not stay in properly, a little wedge will hold them firmly. A guide can be put in the top of each. As many frames as a colony can possibly need, should be prepared, a part, or all, may be put into the hive with the others, and all shut up closely. If only two are put in, let one be on each outside of the others, they will need but little attention until full. But if bees are crowded outside, more should be put between the full combs of the hive. A number of these frames with combs started in them, may be put together on the top of the hive, covered with a box—holes in the bottom of course—glass or boards on the outside. These combs will be filled in less time, if first put in the main hive, and then removed to the top. When these little frames are put between the full combs of the hive, they will need looking at once in five or six days, to see that brood is not started; in which case they should be removed, and replaced with empty ones. The former to

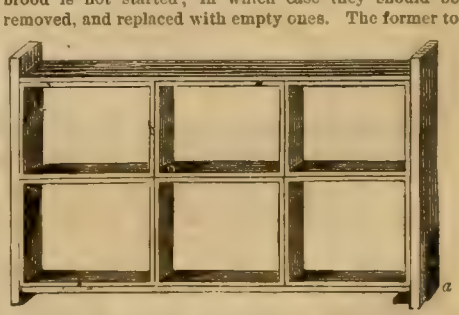


Fig. 4.—FRAME WITH SMALLER FRAMES FILLED.

be set away until the brood is chilled, before they are put on the top, as maturing brood will darken the combs.

The hive alluded to is much more convenient, and much more trouble to make. Those who have not time, or feel too indolent to take so much trouble to get a nice thing, must submit to be rewarded in proportion.

The Tumbler Carts.

At present the handling of manure is the heaviest labor on the farm. Every pound is handled many times before it is finally spread upon the field. Some of this work is necessary, for it must be heaped and fermented, and made fine before it is fit for use, but with improved implements much of the present labor may be saved. The tumbler cart is an implement which will much facilitate the handling of manure; this is in common use upon English farms, but in this country is only seen in cities, for collecting the sweepings of streets, and dumping them upon waste heaps or the scows which carry them away. It is seen in operation in the illustrations; and is a cart box suspended upon a round axle, which either passes through it, or being bent, passes beneath it. By means of a chain affixed to the bottom, an axle, a pair of gear wheels, and a winch, the cart may be tipped and the load dropped. To work with these carts in the most economical manner, a pair of them should be used, or more if necessary, and but one extra hand is needed at the loading. The driver dumps his load almost instantaneously without help, and by partly tipping his cart, and using a drag-hook, he may drop his load in several small heaps in less than half the time he could do so with a fork from a wagon. The method of using the carts is so clearly shown in the engravings, that description is unnecessary. To handle manure from the first in the easiest manner, it should be thrown into one of these carts from the stable, which should be made so that a cart may be driven through it from end to end, and as it is loaded with the fresh droppings, it should be driven to the field where the manure is to be used. There it may be piled up by driving the cart upon the heap, and dumping it where it is wanted. By keeping the end of the pile sloping this may be done. This will prevent the necessity of piling manure in the barn-yard, and will tend to keep the yard neat and clean. When the manure is to be spread, it can be done expeditiously, it being near the spot where it is needed, and thus there will be a saving of time, when work is hurried and time is valuable. These carts are very handy for moving earth, and there are many other profitable uses for them which will occur to those interested. As a general thing carts are not used upon farms nearly so often as they might be with advantage, and when they are to be made, it may be as well to consider whether these tumbler carts do not possess some good points which the ordinary carts do not, for some of the heavier labors of the farm. One of its chief points of excellence is the low body, and the need to lift the material to be loaded only a short distance, and this certainly is an important consideration. Another advantage of a cart is the ease, with which it is turned about and handled in narrow spaces; the less cost of harness, too, is an item worth consideration.

Fig. 1.—TUMBLER CART—LOADING.

Fig. 2.—TUMBLER CART—DUMPING.

Salt Marshes on the Pacific Coast.

BY ROBERT GUNTHER, HUMBOLDT BAY, CAL.

In the October *Agriculturist* is an article on "Progress in Reclaiming Salt Marshes." As I have spent the last fourteen years in reclaiming a salt marsh, nothing can interest me more than to see articles in the *Agriculturist* on salt marshes or on draining. I am astonished to find that the salt marshes along the Atlantic coast still lie waste; on this Bay there are thousands of acres of marsh land, and considerable money has been invested in reclaiming them, but so far I am the only one who has been partially successful. The fact is, few people are in the habit of doing work as it ought to be done, and none but thorough work will answer in reclaiming a salt marsh. No dike has ever been built high and strong enough to withstand the pressure of the water at high tide on this Bay; even my dike, which is at least three times stronger and higher than any other here, broke through last winter. People repair their dikes once or twice, but after they are repeatedly broken through, they give it up in disgust, and I would have done the same but for an inherited obstinacy. My dike has broken through several times, and is not safe now, but I intend to keep to work at it until I make it what it ought to be. There is another reason why the progress in reclaiming salt marshes is so slow. To dike on a small scale will not pay. The larger the tract of land enclosed with one dike, the less is the cost of diking per acre; therefore, in order to dike to advantage, capital is necessary. If a farmer clears a piece of woodland he often raises a large crop the first year, while it takes several years before a salt marsh becomes remunerative.

You say that there is no well-digested plan for introducing the upland grasses. I have experimented for several years upon this point, but I have come to no conclusion as yet. So far as the marsh-land on this coast is concerned, it is injudicious to sow grass seed without plowing; the grass will take, but the salt grass will soon run it out. I tried an experiment and made a great mistake in burning the sod, which is easily done in California, as we have no rain during the summer. I plowed fifteen acres, and after the sod was dry I set fire to it; the fire not only run over the plowed ground, but the sod of several acres that were not plowed was burned. What seems stranger is that I have not been able to raise a decent crop on that ground since. In the spring the soil is sticky, but not tough; after it dries, the clods get hard, yet during the summer the soil slackens and forms a blackish brown powder on the surface, of which I send you a sample; if you can give me any information in regard to it, please do so.—[This sample, which was an almost inpalpable powder, was roughly analyzed; 72 per cent of ash remained after burning, which contained considerable iron. The amount of organic matter thus ascertained is so small that this will hardly pass for poor muck.—ED.]

To introduce upland grasses I believe the best way is to first bring the marsh in thorough cultivation. To do this on this coast I plow the marsh in

the spring and sow it with oats, but not too late, for the sod is so tough that it is impossible to harrow or drag the oats in well, and as much is left on the surface it is necessary to have rain after sowing in order to make it sprout. If the plowing is well done, and all the sod turned over well and flat, it will produce a big crop of oats, and will annihilate the salt grass and weeds entirely, but what crop is most profitable to raise after the oats I have not yet determined. This method has another great advantage. As salt marshes are generally much broken by sloughs and mud-holes, many of those can be filled up by throwing the nearest sods into them. The ground ought not to be plowed very long before the time of sowing, for if the salt grass begins to grow before the oats, it is likely to keep the advantage and spoil the crop.

You mention timothy plumes on a reclaimed marsh five and six inches long. When I used to raise timothy on my marsh without plowing, plumes from ten to twelve inches were not uncommon, yet the timothy never grew thick, and the salt grass always run it out. That part of my marsh which has not been plowed, now produces a mixture of salt and tame grasses and considerable clover. The hay is of a fair quality, and the yield from two to three tons to the acre, yet I am convinced that it is by far the best policy to plow the marsh up.

I should like to know if your salt marshes and ours are composed of similar materials. I send you two grasses. No. 1 dies out, and No. 2 grows all the better when the marsh gets fresh.

[Of the specimens sent, No. 1 is not a grass proper, but a *glasswort* (*Salicornia*), which is also common on the Atlantic coast of both continents, and is one of the plants formerly burned to obtain soda. No. 2 comprises two grasses, one of which, very rigid, is *Brizopyrum spicatum*, also common at the East, but the mass of the sample is of another species, which, being without flowers, could not be identified.—ED.]

Walks and Talks on the Farm.—No. 134.

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I have just got home from a short visit to Massachusetts, and the Deacon came up to have a talk. "I wish you had been with me, Deacon," I said. "Several people, whom I had never seen before, asked, 'How's the Deacon.' As I was going from Albany to Westfield, I sat in the same seat with an intelligent, farmer-looking man. We talked a little about the weather, and looked through the window a good deal. Finally some agricultural topic was alluded to, and he asked if I was a farmer and where I was from? 'Why,' he exclaimed, 'can this be 'Walks and Talks?' I could not deny it. 'Give me your hand,' said he, 'and how is the Deacon?' It was T. S. Gold, Secretary of the Conn. State Board of Agriculture, and we talked lively during the rest of the journey."

I visited three or four of the most celebrated farms in Massachusetts. It is very different farming from ours. I saw no straw stacks and no sheep. Hay and milk are the chief products on the farms I visited. Corn fodder on one farm is raised extensively, and on another oats are grown and cut soon after the grain is formed and made into hay. The land was seeded down with this crop, and I never saw a better catch. It seemed to be quite common, too, to fallow a field and then seed it down with timothy and clover in the autumn without any other crop. This is a pet recommendation of my own, and I was glad to hear that it worked admirably.

I would give a good deal for one of these Massachusetts barns—that is, if I had money enough, I would give, say from one-third to one-half what they cost. I could use them to great advantage. One barn, built by the former owner of the farm, at a cost probably little less than what he afterwards sold the farm for, was about 120 feet long and 40 feet wide—the barn-floor running through the center, the long way of the barn. There was an ell to this main barn, about 80 feet long and perhaps 36 feet wide. It was occupied by two rows of cows, facing a wide passage in the center, and there were several loose boxes for calves and for cows about to calve. The arrangements were excellent. "This is magnificent," said I, "but what is the use of this wide passage between the cows. It seems a great waste of room."—"That is horrible heresy here," replied my friend.—But he gave me no satisfactory reason. Underneath the whole of this large barn is a splendid cellar. It is dry, warm, well lighted, and well ventilated. If I had such a cellar, I think I could find ample room in it, with open yards attached, for a flock of two hundred long-wool sheep, fifty or more head of cattle, one hundred or more pigs, a stable for all my horses, and a cellar capable of holding 10,000 bushels of roots. All this room is sacrificed, at any rate to a great extent, apparently for no other reason but to secure a *manure cellar!* The advantages of this system of handling manure must be very great, to pay for such a large and costly receptacle. One-fifth of the room would be sufficient to hold all the manure for six months, and the labor of putting the manure into a barrow and wheeling it to one end of the building and dumping it into the cellar, would not be much more than opening and shutting so many trap-doors behind the animals.

I got several capital ideas from my short visit—one of which I have adopted since I came back. I always knew it was a good plan, but there is nothing like seeing the thing carried out on an extensive scale in practice. When I came home, I said to my men, "You recollect those three gentlemen who where here during the State Fair. They live near Boston, and I have just been to see their farms. And I wish you could see them too. I do not think I ever saw more active, enterprising, and intelligent farmers in this or any other country. One of them keeps 200 pigs, and I was on another farm where 150 were kept."—"We've got pretty near as many," said Willie."—"Yes, but do you see yonder big straw stack," I replied. "Big as it looks, we shall have to be very saving of it, or we shall be short of bedding before next harvest. Now, these gentlemen do not have one-tenth as much straw, and yet they manage to keep their cow stables and pig pens as clean as we do, and let none of the liquid run to waste."—"Perhaps," suggested Willie, "they use corn-stalks, or potato tops, or horse litter, or"—after a little whispered prompting from the Deacon—"or dried muck from the swamp."—"No," I replied, "it is something that we have plenty of. There are loads of it close at hand."—"I know what it is," said Charley; "*it's dirt.*"—"Charley has guessed it," I said. "In the summer they draw a quantity of dry earth from the roads, or from anywhere most convenient, and store it up in the barn ready for use. And every day they scatter a few shovelfuls of this dry dirt about the pens and stables. And now," I continued, "right under that barn, where we are making the new cellar, is all the dry earth we need. Fill that empty pig-pen with it, and use as much of it every day as you want in the cow stable and in the pig pens to keep them dry and sweet. Scatter a little of it on at a time. You will find a wheelbarrowful will go a good way."

This is a long story about a very simple matter. But it had the desired effect. It carried conviction. And now, if I was writing an article for the papers, I should say we are using "dry earth as an absorbent and disinfectant." But in these plain "talks" I say, we are using dirt to keep the pig pens clean.

"You must be making a pile of money out of your pigs this winter," remarked the Squire.—"I am making a pile of manure," I replied, "and hope to get a little money from the old farm by and by. I have had the men and teams drawing out manure for over a week, and putting it in a pile in the field where I am going to sow mangels next spring."—"I see," said the Squire, "you have got three extra day hands. The Deacon and I think it does not pay to employ so much labor during the winter."—"You are both of you men whose opinion," I replied, "is worthy of consideration. Still, every man must do his own thinking. I keep eight horses. They cost me at least $16 a week. I want to make them earn their living. As long as I can find work for the teams that ought to be done, I think it pays to hire extra men enough to keep the teams busy. This is all I am doing. Every spring, summer, and autumn, we have to leave something undone that we want to do, because men and teams are pressed with work that can not be put off. The only remedy is to push things now. We are drawing out manure. When this is done, we shall draw stones from the heaps to build a stone wall next spring. Then there is wood to haul, and straw and hay to chaff. We have ten tons of plaster to draw nine miles from the mill, and draining tiles an equal distance. And as fast as we get spare barn room, we can draw in a stack of hay from the field."—"You ought to build a new barn," said the Squire.—"When I do, I shall aim to draw the materials in the winter," I replied, "and not be compelled to neglect farm work in summer. I tell you, if you only go at it, you can find plenty of work for your teams to do in winter. And if by hiring a man you can keep a team busy, that would otherwise be doing nothing but eating hay in the stable, it will pay to do so."

"Perhaps you are right," said the Squire, "but the days are very short, and you want men who will fly round in a morning."—"Begging your pardon," said I, "that is precisely what I don't want. I want a man who will work after dark at night, rather than a man who is poking round before light in a morning. When we are drawing out manure, I like to see a man fill his load at night, and have it all ready to hitch on to the first thing in the morning. Your sluggish 'early bird' will not do this. He will be up at 4 o'clock in the morning. He will be watching the clouds and speculating about the weather. It will be too cold, or too wet, the road will be slippery, or too rough, or there will be too little snow, or it will be drifted. There will be a lion in the way, and he will have to wait until broad daylight before he can make up his mind whether to go to work or not. Finally he will get out his horses, and let them stand shivering while he fills his load. The other man, who got all ready the night before, brings out his horses cheerfully and promptly, hitches them to the load, and is off to the field, whistling merrily in the frosty air. He warms himself up by throwing off his load with a will, and is back again before the other has made a beginning. It is so with everything we do. The great thing is to get an early start."—"That is precisely what I say," broke in the Squire.—"Exactly, but you want to begin the day in the morning, while I want to begin it in the evening. 'The evening and the morning were the first day.' 'Give not sleep to thine eyes, nor slumber to thine eyelids, till you have done all that you ought to do.' It is bad enough to lie abed late in a morning. It is worse to lock up the stable door soon after sundown, leaving the horses hastily fed and poorly groomed, that you may spend the long evening yawning over a hot stove."

I am always sorry for a young farmer, who thinks he is going to get rich by adopting some scientific suggestion, or some mechanical invention, or by raising some new variety of grain or fruit, or keeping some lauded breed of cattle, sheep, or swine. It won't do. It is beginning at the wrong end. Better at first follow the practice adopted by the best farmers in the neighborhood, and then, after a few years' experience, gradually adopt any improvement you may see, or hear of, or read about. In the meantime, the real aim of the farmer should be, to get his work done as promptly, as effectively, and as cheaply as possible. An English farmer has recently suggested a plan, which the Deacon and I have often talked about. He keeps 12 horses. He would, therefore, require six men to take care of and work them. He proposes to use three-horse teams and double plows. There is nothing new in this. But he proposes to have one man take charge of the 12 horses. This is to be his business. Then he would keep only two plowmen, and let them, as far as possible, do the plowing, harrowing, cultivating, rolling, drilling, etc., at a certain

price per acre. Each man would have six horses; three would be resting in the stable, while the other three were at work. I believe the plan was to change horses not only at noon, but perhaps once in the forenoon, and once in the afternoon, though the details are not given. In this way, he thinks, he should get full as much work done, with just half as many men, while the horses would not suffer, as they now so often do, by being kept too long at work in the field. I feel sure that it would pay me to have a man do nothing but take care of my horses, implements, machines, wagons, harness, and everything connected with the teams. If he would keep everything in repair, and everything in its place, and clean and feed the horses properly, he would earn twice as much as he possibly can by going into the field to plow and harrow.

I am trying to persuade the Squire and the Deacon to join with me in ordering ten tons of superphosphate and ten tons of nitrate of soda. We can get, so I am told, a superphosphate, in lots of not less than ten tons, at a price equal to 12½ cents per pound for the soluble phosphoric acid that it contains. We can afford to use it at this price, and I feel pretty certain, that we can also afford to use nitrate of soda on barley and potatoes—using say 200 lbs. of superphosphate and 200 lbs. nitrate of soda per acre. Commercial nitrate of soda contains about 15 per cent of nitrogen, and if it can be bought for 3¾ cents per lb., we get nitrogen at 25 cents per lb. It has hitherto cost us at least 30 cents in our best artificial manures.

"But will it pay?" asked the Squire, who has several large farms, and is quite rich, and very keen, where dollars are concerned.—"At the present price of barley," I replied, "nothing can pay better. The manure will cost us say $10 per acre, and if the land is dry, well worked, and the crop is put in early, and the season is favorable, we are pretty sure to get an *increase* of 20 bushels of barley per acre, from this $10 worth of manure."—"You put in a good many 'ifs,'" quietly remarked the Deacon, "but if the Squire likes to join, I will take half a ton of each. But *you must say nothing about it.*"

After they were gone, I could not help exclaiming, "good for the Deacon."—I am anxious to have him try it. Not merely because I think it will pay him, but because if it does, I can prove to a demonstration that we can get nitrogen and phosphoric acid at a far cheaper rate here at home, by keeping more stock, and feeding it liberally.

For instance, a ton of corn-meal contains 36 lbs. of nitrogen, worth, at 25 cents a lb., $9.00. It contains phosphoric acid equal to 22½ lbs. of phosphate of lime, worth say 6 cents a lb., or $1.35; and, besides other matters, it contains 7 lbs. of potash, worth say 7 cents per lb., or 49 cents. In other words, the manurial value of a ton of corn is $10.75. On the same basis, the manurial value of a ton of oats is $12.10; a ton of wheat, $11.94; barley, $10.64, peas, $20.54; fine mill-feed, $22.76; bran, $24.32; malt-combs, $30.23; clover-hay, $15.82; wheat-straw, $4.57; oat-straw, $4.87; *good* pea-straw, $9.35; meadow-hay, $10.65; mangel-wurzel, $1.70; potatoes, $2.73; linseed oilcake, $31.96; decorticated cotton-seed cake, $45.26.

I am now feeding my young pigs on malt-combs, bran, and corn-meal. The malt-combs cost 15 cents a bushel, or about $12 per ton. The bran $22 per ton. The corn-meal $38 per ton. We mix about 100 lbs. malt-combs, 50 lbs. bran, and 50 lbs. corn-meal, with 80 gallons of water, and steam it until well cooked. This cooked food contains about 75 per cent of water, or about as much as green clover. Pigs six months old eat about 20 lbs. of this mixture each per day, and gain about 8 lbs. each per week. The weekly ration, therefore, is composed of 17½ lbs. of malt-combs, 8¾ lbs. bran, and 8¾ lbs. corn-meal for each pig. The food, leaving out the expense of cooking, costs 37½ cents per pig per week, and from this we get 8 lbs. of increase, equal to say 6 lbs. of dressed pork. I am expecting to see such pork worth 12½ cents per lb. If so, then the pork will bring just double what the food costs. In other words, three shillings' worth of food produces six shillings worth of pork. And we get the manure into the bargain.

Now if nitrogen is worth 25 cents a lb., phosphate of lime 6 cents, and potash 7 cents, then the manurial value of 17½ lbs. malt-combs is 26¼ cents; 8¾ lbs. of bran 10½ cents, and 8¾ lbs. corn-meal 4¾ cents. Total 41¾ cents. In passing food through an animal, a small portion of nitrogen is retained in the form of flesh, hair, bones, etc. It probably ranges between five and ten per cent. In other words, 100 lbs. of nitrogen in the food, would give us from 90 to 95 lbs. in manure. The loss of phosphoric acid and potash is very much less than this. Provided we do not lose any of the manure from leaching and evaporation, we shall be safe in concluding that there is not more than 10 per cent of the manurial value of the food taken out of it in passing through an animal.

These figures, therefore, lead to the following comfortable conclusion. Each pig per week eats three shillings' worth of food; and for this we get six shillings' worth of pork, and three shillings' worth of manure.

And so, if I can get the Deacon to buy nitrate of soda and superphosphate, I shall be able to prove that he makes a mistake in not keeping more stock—that he can get nitrogen, and phosphoric acid, and potash, cheaper from clover hay, oil cake, and bran, than he can buy it in the form of artificial manure.

When I have gained this point, then the question will come up why we do not get as great an effect from the nitrogen in our manure, as we do from the nitrogen in ammonia and nitric acid. And this will bring up the question, how best to manage and apply manure. The Deacon and I differ on this subject, and I want to convince him that if I am not right, I can at any rate give some good reasons for my faith and practice.

Emasculation by Torsion.

BY J. C. MCKENZIE, V. S.

The "ecraseur," as described in the *Agriculturist* of Nov., 1874, has many advantages over the older methods of castration, as by its use the operation

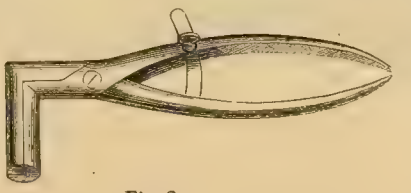


Fig. 2.—FORCEPS.

is rendered simple and safe. But none of the methods hitherto in use are any simpler or safer than that of the torsion clamps and forceps, which is new in this country, but extensively used by European veterinarians. The method is as follows: the horse being cast and secured in the usual manner, the operator, kneeling on the left side, grasps the parts so as to make the skin of the scrotum tense. He then makes one steady bold incision about three inches long through the scrotum and down on the gland, which can now be cleared of its coverings, and gently raised from its bed; the operator then cuts through the white and bloodless portion of the gland, being careful to place nothing but those portions containing the artery and veins accompanying these arteries in the clamp, fig. 1. The clamp, which is rough in its inner edge, like the teeth of a smooth single cut file, is then pressed rather tightly on the cord, and the screw turned to retain it in place; the cord is then divided with the knife, leaving a portion, which is then grasped by the forceps, fig. 2, about a quarter of an inch from the clamp. This is gently twisted until the coats of the artery are broken and drawn out, resembling the end of a thread; the forceps and clamp are then removed, and the cord allowed to fall back within the scrotum; the other gland is treated in the same way, and the operation is completed. No after-treatment is required, little or no swelling takes place, the process of healing commences at once, and continues to go on successfully. This method has the advantage over the ecraseur that the operation can be performed in shorter time, as the working of the ecraseur must go on slowly to insure the desired amount of compression on the vessels, to avoid hemorrhage, which would otherwise take place. But by torsion, in most cases,

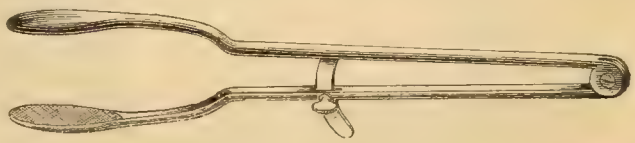
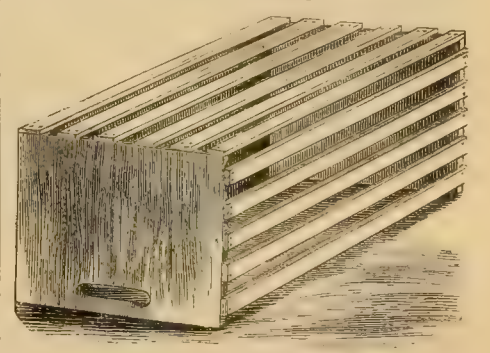


Fig. 1.—CLAMPS.

not one drop of blood is lost from the vessels of the cord. The second advantage over the ecraseur is, that it is less painful, the horse giving only one struggle when the clamps are pressed tightly, and the animal feels little or no pain while the act of torsion is going on. In using the ecraseur, I have seen violent struggling at each alternate turning of the screw, the compression causing a shock to the animal every time. Another advantage over the ecraseur is, that the instruments used cost little over one-third of the price of a good ecraseur. This is a new method in this country, and is not to be confounded with simple torsion of the vessels, which is of more ancient date, and is often followed by hemorrhage. This method of torsion was introduced into Rochester, N. Y., last spring, and the operation performed successfully upon a large number of colts and old horses.

A Picking or Marketing Box.

Boxes that will hold a heaped bushel, (2,750 cubic inches,) and that will fit closely into a wagon-box, are very useful for gathering corn-ears, potatoes, apples, or such market truck that is generally sold by the bushel. They are equally useful for marketing such produce. When they are most needed, there is no time to make them, but the winter months furnish the leisure needed, to prepare a supply of them. Those who would have them for next season must therefore now procure the materials, and go to work to make them. The most convenient box of this kind is shown in the engraving. It is 16⅜ in. long, 14 in. wide, and 12 in. deep, inside measure, thus making 2,751 cubic inches, or as nearly as possible a heaped bushel. To make them most economically, procure a quantity of dressed ¾-in. boards, 12 in. wide, and 12 ft. long. These are cut into pieces, 14 in. long, each board making 10 pieces, which are for the ends of the boxes. A row of 4 holes are bored with an inch-and-a-half bit and auger, about 3 inches from one side of these boards, and connected by cutting away the wood between them. This makes a place in which to put the fingers, when the boxes are handled. Provide also a quantity of battens, 1½ in. wide, ¾ in. thick, and 12 ft. long. These are cut



A PICKING BOX—BOTTOM UPWARD.

into lengths of "scant" 17¾ inches. Six of these pieces are nailed to the end-pieces for the bottom, and five upon each side, leaving spaces of about an

inch between them. The box is then complete. Two will fit lengthwise into a 36-inch wagon-box, and if the wagon-box is 14 ft. long, 24 boxes will cover the bottom of it; 24 more may be placed upon the lower ones, making a load of 48 bushels. For a hundred boxes there will be needed 20 boards, or 240 feet of face measure of lumber, and 200 battens of 12 feet long, or 300 feet board measure. Sixpenny nails should be used to nail on the lath. As the corn is husked, or the potatoes or apples gathered, the boxes should be filled. The empty boxes are placed upon the field, where they will be needed, from the wagon, and the full ones are then picked up and loaded. Thus half the boxes are being filled, while the other half are being carried off and emptied. When out of use they should be piled carefully away in the tool-house. They may be piled away in the root-cellar, filled with potatoes, one above the other, very neatly and compactly. If there are several varieties grown, each may be thus kept separate from the others, by chalking the names of the variety upon the ends of the boxes. The cost of 100 of these boxes would be about $15 for lumber and nails, and 5 days' work in cutting the stuff and putting it together. With care they may be made to last many years, so that the yearly cost is a trifle, which will be repaid many times over by the saving in time and labor in handling the crop each season.

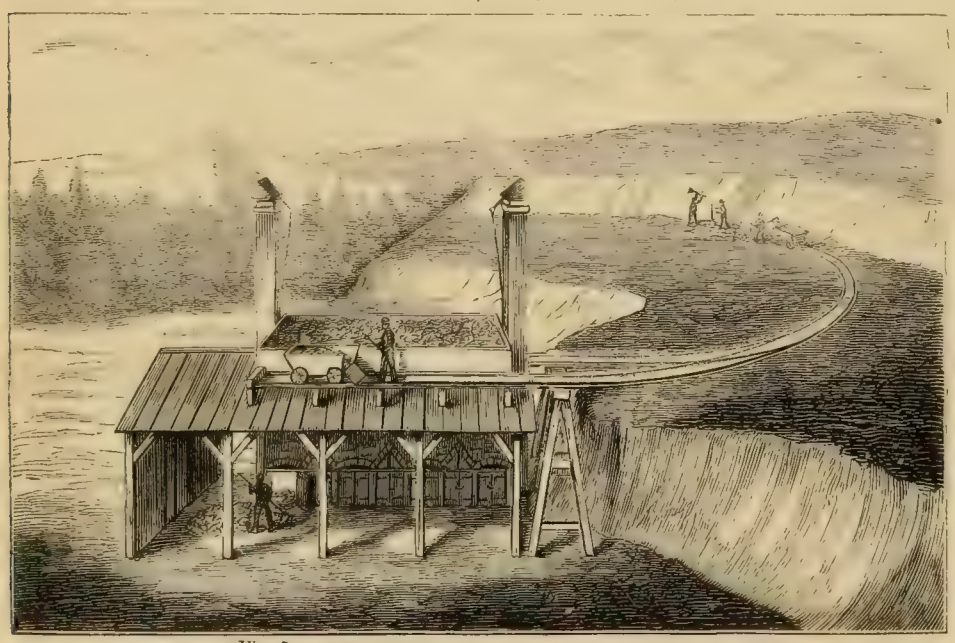


Fig. 5.—ELEVATION OF IMPROVED PERMANENT KILN.

Permanent Lime-Kilns.

In many places where limestone underlies the country for miles, and rises in bare cliffs on every hand in the midst of forests and timber, furnishing abundant fuel, lime is often a scarce article. The reason for this is that the lime is burned in kilns of the poorest and most temporary character, and those who produce the lime make no money, while its use is seriously restricted. A knowledge as to the building of lime-kilns is much needed. Scarcely a week passes without a request is made for information as to the building of them. The *Agriculturist* has already given directions for building a cheap kind of kiln, known as the intermittent kiln, (Sept., 1871,) and now, in response to several requests, presents plans and directions for permanent kilns. Lime is one of those necessaries, for which a cheap supply never fails to create a large demand. A permanent kiln of some kind is the cheapest method of producing it. One of these kilns, as shown in fig. 1, may be built in a hill-side. An excavation is made in the hill about 15 feet deep and 14 feet in diameter at the top, gradually tapering in the form of an inverted cone, until it is 5 feet in diameter. From thence the excavation is carried straight downwards for about 4 feet. In this excavation the walls of the kiln are built of sand-stone, trap-rock, or hard brick, or some refractory material, that will resist the necessary heat. Commencing at the bottom, the ash-pit, *A*, is built up square with upright walls, the floor sloping forwards, and an open front, as shown in fig. 1. At the top of the ash-pit the wall is gradually drawn in a few inches on each side, to prevent the lime from clogging the throat. Across the pit, the bearing bars, *b*, *b*, of cast iron, 3 inches by 2½, are built into the walls in such a manner that they may be drawn out when required. Upon these the draw-bars, *c*, rest. These are round wrought-iron rods, 1¼ inch in diameter, with spaces of 1 inch between them. They should have an eye upon the near end, so that a bar may be inserted with which to draw them out with a twisting motion when they are held by the pressure of the lime upon them. Above these bars a strong wrought-iron frame, 3 inches wide, seen at *d*, is built into the wall, through which the fire may be lighted, or a bar inserted to loosen the lime when choked in the throat. An arched opening, 6 feet high, is made at the front of the kiln, in which a man can stand upright, to draw the lime or to light the fire. This archway is seen at *E*. In fig. 2 a front view of all these parts is given. Above this arch the wall is carried up double, being filled in with loose rubble. In front of the kiln a shed is made and roofed with board. In this the lime is stored and protected from the weather. To start a kiln, some kindling wood is thrown down upon the fire bars, and a supply of fuel, either wood or coal, is placed upon this to a depth sufficient to start a good fire. Some limestone in small pieces is then thrown upon the fuel, and the fire is lighted. The iron frame is then closed with bricks and plastered with clay, or an iron damper is fixed to it and closed. When it is well started, more fuel, then more limestone is thrown on, until the kiln is filled, and as the mass burns down, this is repeated, the kiln being kept filled to the top. A circular path, or platform, is made around the top of the kiln, from which it is filled from wheelbarrows or from dump-carts. In feeding such a kiln as this, the proportions are six of limestone to one of fuel. One cord of wood is equal to one ton of coal. After this kiln is once started, it needs no re-kindling for months together; as the materials sink down, they are replenished at the top of the kiln in the proportions mentioned. As soon as the lime is sufficiently burned at the bottom, which may be tested by drawing two or three of the bars, it may be drawn regularly every twelve hours, by taking out a few of the draw-bars and allowing the burned lime to fall into the ash-pit, from which it is pulled with an iron hoe or rake into the shed to cool. The bars are then driven back into their places again, and left until the next drawing. An improved perpetual kiln, suitable for a large and permanent business, is shown in figs. 3, 4, and 5. Fig. 3 is the ground plan. It is 18 feet long and 13 feet wide, with a draught chimney at each end. A central flue, seen between the chimneys, with openings at the top, through which the fire reaches the lime, passes through the kiln from end to end. Lateral flues of the same character reach from the sides to the central flue. These are seen at *a*, *a*, *a*, figs. 3 and 4. Between the flues are the withdrawing holes, *b*, *b*, *b*, figs. 3 and 4, furnished with bars similar to those already mentioned. The fire and withdrawing holes, and the ash-pits beneath, are closed with iron doors after the fire is started, except when it is necessary to replenish it

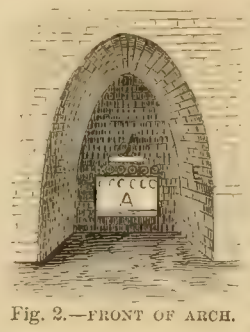


Fig. 2.—FRONT OF ARCH.

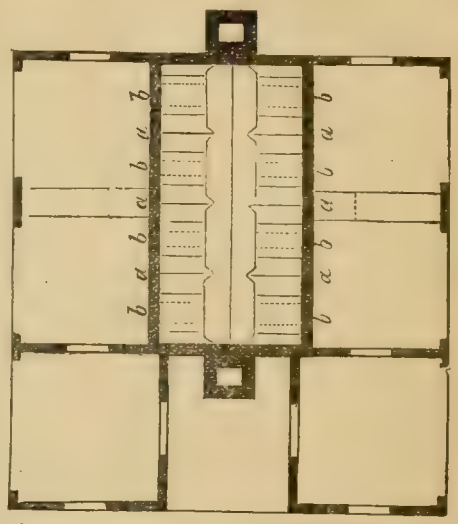


Fig. 3.—PLAN OF IMPROVED PERMANENT KILN.

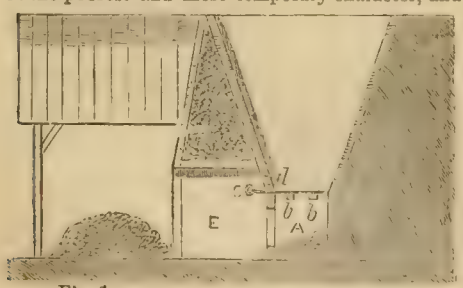


Fig. 1.—SECTION OF PERMANENT KILN.

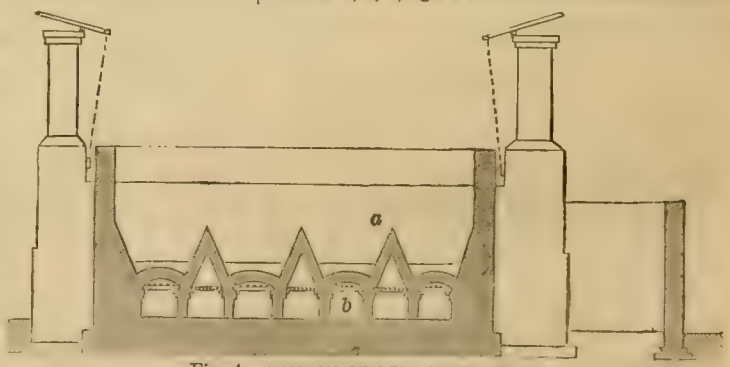


Fig. 4.—SECTION OF PERMANENT KILN.

with fresh fuel. The flues are covered with heavy cast-iron plates, pierced with round holes 2 inches in diameter. The ends of the center flue open into the draught chimneys, seen at figs. 3 and 4. These chimneys are covered with plates of cast-iron, arranged so as to be opened when the fuel is first fed into the fire, to let the smoke pass off, and closed when it has burned up clear, to throw the flame into the mass of limestone in the kilns. The kiln is surrounded by an open shed, and is supported by buttresses, one in the center and one at each end, at each side. The walls are two feet thick, and are strengthened with iron bands around them, drawn tight with adjustable couplings. Fig. 4 is a section of the kiln, showing the method of construction. It is seen that it is simply a combination of four ordinary kilns. The kiln should be lined with fire-brick, 9 inches thick, for 4 feet above the fire-bars, and the work around the fire-holes should all be of fire-brick. Fig. 5 shows an elevation of the kiln, with the track laid from the quarry, upon which the cars of limestone are run upon a down grade. It shows the fire-holes and withdrawing holes, the shed surrounding the kiln, and the general arrangement of the whole. The lime is drawn from this kiln as from the one previously described, and as the unburned stone sinks down, more is thrown in from the cars, shown in the illustration. By regulating the chimney dampers, the heat may be kept low, or be raised, so as to burn the lime in 12 hours or less. Lime may be drawn every 6, 12, or 24 hours, and will cool ready for use in 12 hours. One part of coal to every seven parts of limestone is used in this kiln. Lime burned in it is free from ashes, and is perfectly calcined; it is therefore of extra good quality for plasterer's use. There is also an economy in fuel and in time in burning the lime. These advantages go far to offset the large first cost of the kiln, and the possibly greater cost of labor in operating it.

Cutting Ice in Shallow Ponds.

In cutting ice in shallow water, the ordinary ice-saw is very inconvenient. In such a case the following expedient may be adopted. Procure a worn out mill-saw, or a cross-cut-saw, with the teeth changed to the shape of rip-saw teeth, rivet to it a long handle, in a sloping direction, so that when in use, the saw can be worked almost horizontally as shown in figure 1. When the first cut is to be made, the axe is used to open a hole in the ice. The saw is then worked back and forth from the hole, in a slightly sloping or nearly horizontal direction, and ice may thus be cut when the water is not over six inches deep, without touching bottom. To make the blocks of even size, it is only necessary to fasten a piece of smooth board to the saw, and parallel to it, by iron rods and screw bolts, at such a distance from it as will be equal to the size of the blocks wanted, see fig. 2. With this, the lines of the cuts are marked out first, it is then removed and the blocks are cut. This form of saw we have found the easiest to use both in deep and shallow water; and a heavy blade with rip-saw or chisel-shaped teeth, such as a worn out upright mill-saw much the easiest to work with, as the weight rests upon the ice, and it is only necessary to push it forward and draw it back with a low motion, which is far less fatiguing than to lift a saw directly up and down, making an upright stroke.

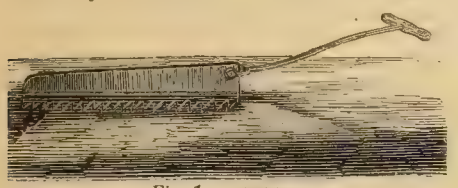


Fig. 1.—ICE-SAW.

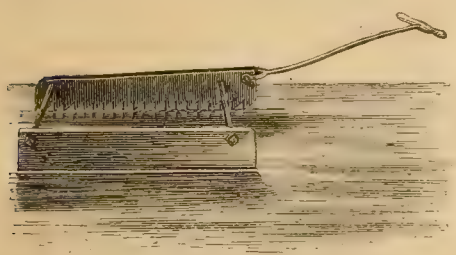


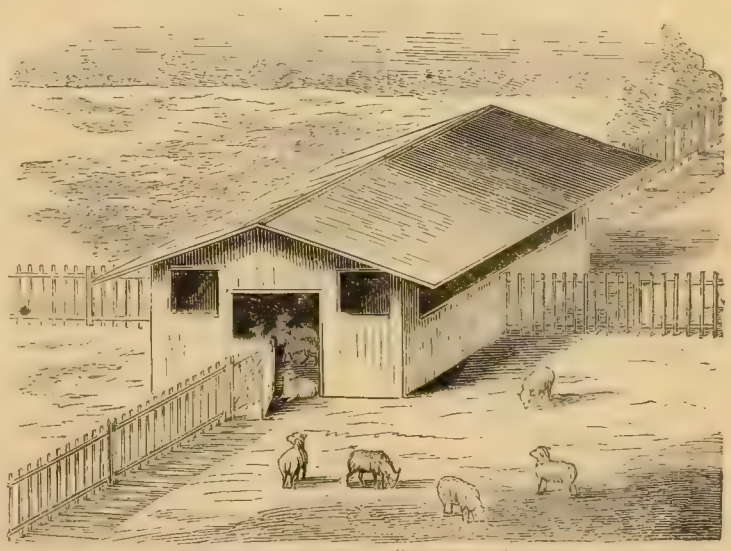
Fig. 2.—ICE-SAW WITH MARKER.

The "White Sage" of the Far West.

The common names of plants are often quite puzzling, and it is frequently difficult to see their applicability to the plants which bear them. Especially is this the case in the newer parts of the country, where old and well-known names are made to do duty for plants quite different from those to which they properly belong. Thus on the barren plains of the Far West two or more species of wormwood are called "sage," their only resemblance being in the sombre color of their foliage. In the mountains of Utah, Nevada, and Colorado there is another plant known as "White Sage," which is quite as far removed from the sage of the Plains, as it is from the sages of the gardens. This White Sage is a plant of no little importance to the settlers in the regions where it grows, as it is often their chief reliance for winter forage. It was first described by Pursh, from specimens collected by Lewis & Clark, as *Diotis lanata*, but for good reasons it was placed in another genus, and its proper botanical name now is *Eurotia lanata*, and it belongs in the same family with the beet, the spinach, and the pig-weed. It is a half-shrubby plant, being woody at the base, with erect, somewhat herbaceous branches, and is from 6 to 18 inches high. The numerous leaves are narrow, and, as well as the rest of the plant, clothed with white hairs. The stamens and pistils are in separate flowers, and these are sometimes borne upon the same plant, and often on different plants; they are gathered into spike-like clusters at the ends of the branches. The engraving gives the appearance of a small branch of the natural size; at the left hand is a staminate flower closed, and one laid open, and on the right-hand side a pistillate flower and seed. The pistillate flower is surrounded by bracts, forming a sort of cup, which bears four dense tufts of long white hairs. In drying, the hairs turn brownish, and give the plant quite a different aspect from that which it has when fresh. Two other species of *Eurotia* are found in Asia, and it is thought that our plant may be a narrow-leaved form of one of them. The White Sage is found from the British possessions along the mountains as far south as New Mexico, and westward to the Sierras: it often covers large tracts in the elevated valleys, and on the driest land. Our correspondent, I. D. Pasco, Esq., whose farm is in Nye county, Nevada, at an elevation of 6,800 feet above the sea, states that there is before his door a "field" 25 miles long, and averaging 2 miles wide, where hundreds of horses and cattle are grazing upon the White Sage this winter, and are fat. He says that as soon as the grass starts in the spring they prefer that, but will even then take an occasional bite at the sage. In reference to its great value as a winter forage, the plant is in some localities called "winter fat."

THE WHITE SAGE.—(*Eurotia lanata.*)

The plant has a strong and unpleasant odor, and it is said to impart a peculiar and rather disagreeable flavor to the beef fed on it, a difficulty which may no doubt be overcome, by changing the food for a short time before slaughtering.



SHED FOR SHEEP.—(*See next page.*)

Soiling Sheep.

A "Virginia Correspondent" asks if it would not be practicable to soil sheep in yards much in the same manner as is done with cattle—to carry the food to them, and feed it in racks; as thus they may be made to serve as manure makers, and at the same time be protected from the dogs, which are so numerous as to prevent keeping sheep in fields. In such a case as this it is very probable that sheep might be kept as proposed, but it would be much less economical than to hurdle them in the fields. If hurdling is impossible, the next best thing is to keep them in yards near the barn. It has sometimes been done to prevent the trouble and expense of continually watching the sheep in the

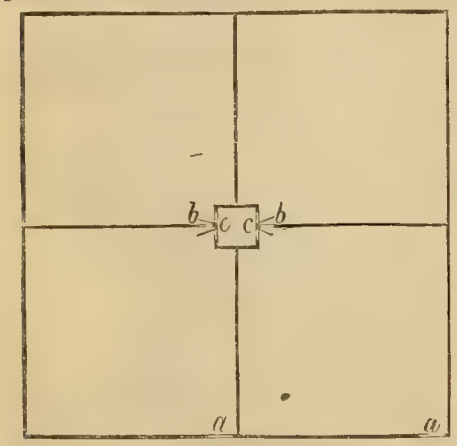


Fig. 2.—PLAN OF SHEEP-YARD.

field. The arrangement is as follows: A green paddock of about an acre is fenced and divided into four parts, as shown in the accompanying illustrations. A partly open shed with feed-racks all around it is placed in the center. For 50 sheep a building 20 feet square

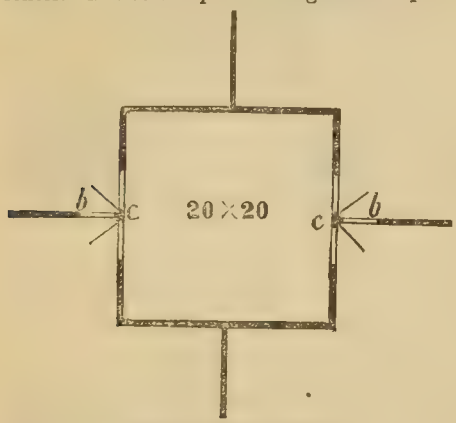


Fig. 3.—PLAN OF SHED.

is amply large. A door from each quarter of the paddock opens into this shed. As one quarter is used, the doors opening to the others are closed.

Fig. 2 shows the yards with the shed in the center. The outer gates are at *a*, opening into the lane. The gates *b*, *b*, lead into the rear quarters. The doors of the shed are at *c*, *c*. Fig. 3 shows the plan of the shed with the feed-troughs. Fig. 1 (on the preceding page) gives the elevation of the shed, with a large double doorway closed by half-doors, and open at the top. There are also large open windows, so that the shed is airy. There is no water in the yards, and this

Fig. 4.—DOG-GUARD.

we believe to be the best plan, as the yards are kept dry, and it necessitates at least so much exercise as will be derived from driving the sheep to water twice a day. The change of yards is needed to keep them dry and free from mud in wet weather. The crops that may be usefully fed in such a yard are rye, clover, grass, rape, mustard, peas and oats, barley and tares, turnips, or any others that are used when sheep are fenced by hurdles. A dog guard may be made by fastening projecting pickets, either horizontally or upright, and running two fence-wires through them. Figs. 4 and 5 show how these may be made. In such case the pickets are nailed to the fence-posts.

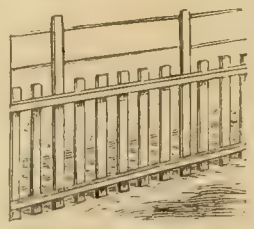


Fig. 5.—DOG-GUARD.

Tim Bunker on Hookertown Views of Mutton.

"It 'll keep a month," said Seth Twiggs, as he took his seat on the sill of the Meeting-house shed, crossed his legs, clasped his hands over one knee, and blew that long puff of smoke that indicates a pipe freshly lighted; "and that is a strong pint in any kind of meat in these days, when you have to pay two prices for everything you get out of the butcher's cart. In old times, you see, you could keep yerself in meat all winter by changing round a little when you butchered. But now every thing goes to the market, and every feller has to look out for himself."

"And they du it tew," said Jake Frink, "every time. Not much chance for a feller in this world, unless he's extra smart"——

"And lets licker alone," added George Washington Tucker, whose breath was perfumed with the odors of the only rum hole not yet cleaned out of Hookertown. "Not even cheap mutton can help a man who drinks."

"The man lies that says I've spiled a quarter of the licker you have," said Jake indignantly.

"Then again," said Seth, who was not to be switched off from the main subject by the mild palaver of his neighbors, "as Mr. Spooner would say, mutton is the best meat in the world, and the cheapest. You see them grades have run in my brush pasture all summer, and I don't believe the flesh they have laid on has cost me a cent a pound, for the pasture war'nt worth much anyway. Just kill a wether in December, and hang him up in the shop, and you can cut chops off of him a whole month, certain, and I guess all winter. My mutton allers gits eaten up so quick, that I never have a chance to know how long it would keep."

"Get a bigger kind of sheep," said Dea. Smith, "and you will have a chance to know. There is some difference between a skrimpy Merino that won't cut ten-pound to the quarter, and a Cotswold grade that will weigh twenty-five-pound to the quarter and upwards. Hang up such a carcass, and you could have roast as well as chops all winter."

"I shouldn't wonder if you're right, neighbor," said Seth, musing between the puffs. "Where grass don't cost much, you may as well have a big sheep as a little one, and mutton is about the same thing, greater or less."

"You are mistaken there," said the Deacon—"South-Down mutton, well fed, is much better eating than any of your small breeds. The Cotswold cross enlarges the carcass, and puts a little more fat into the rather lean South-Down meat. The lambs are larger, and you could send them earlier to market, and get a better price. I would not have a Merino sheep on my farm."

"The wool is fine," suggested Seth.

"I know," said the Deacon, "but there is next to nothing of it—and there is not such a difference between very fine and middle wools as there used to be. There is a good market for all the wool you can get from South-Down grades, and there is likely to be so long as woolen goods are used."

"And sheep are great on cleaning up brush pastures," said Jake Frink, who seemed to appreciate them chiefly as labor-saving machines. "You see I have not used a bush-scythe in my pasture for twenty years."

"You might say forty," said Tucker, "and no man would dispute you—guess there ain't such an article among your kit of tools."

"It's rusty, I'll allow," said Jake, "you see, the sheep have done the grubbing mostly, and a man don't like to waste any elbow grease."

This conversation of my neighbors at the fall fair on Hookertown Green, shows the drift of public sentiment on the sheep question. The fact is, we want more sheep—your wife wants them, and your children want them, and we must have them. The old cry of dogs will not do for this Commonwealth, for we have a dog law that keeps the curs under. They are roundly taxed, and if a sheep owner loses a sheep by dogs, he can present his bill to the Select Men, and get something like the value of those destroyed. This is fair, and, on the whole, fosters sheep husbandry. We cannot have any kind of stock without encountering some enemies—and running some risks. Dogs are not half so dangerous to sheep as skunks and weasels are to poultry. And yet we contrive to raise a respectable amount of chickens, ducks, turkeys, geese, and eggs, on almost every farm, and these little items help to swell the farmer's profits. The wool is a secondary matter, whether it be long or short, coarse or fine. We want sheep mainly for their flesh. It is a wholesome, well-flavored meat, and the dressing can be easily managed by the farmer himself, and with a little corning in summer, and none in winter, the carcass is readily disposed of. Farmers ought to eat more fresh meat, and would do so if they raised it upon their own farms. There is not so much temptation to sell mutton as there is poultry, for it only brings about half the price. It probably goes quite as far in sustaining muscle. Then sheep as fertilizers of the soil are invaluable, a point not touched upon by my neighbors. Any pasture where they run is constantly improving in its capacity to yield grass. Brush dies out under the constant cropping, weeds disappear, and the green smooth sod remains, and grows ranker each year. This advantage is so great, that some very close observers say, the keeping of sheep costs the farm nothing. This is so. Then what we eat and sell from the flock is clear gain. Dea. Smith might have told a good deal more than he did about Cotswold crosses. The fact is, he sells lambs from South-Down grades by a Cotswold ram, that bring him on an average nine to ten dollars each, every summer. And they are all turned off in the early part of the season, while there is flush feed in the pasture. Then the wool from the old sheep is an important item. It averages about fifty cents a pound, and the fleeces are large. The fact is, the Deacon ciphers close, and I have watched him so close for so many years, that I am prepared to "go it blind" on any thing that he concludes to crop his farm with. I am fully persuaded that if any thing did not pay, he would find it out as soon as the next man. I have tried sheep, and know they pay better than most other stock we keep on our farms. Connecticut might quadruple its sheep with profit next year. Let us have more mutton-chops and less pork.

Hookertown, Ct., Jan. 1st, 1875. } Yours to command, TIMOTHY BUNKER, ESQ.

Evergreen Trees from Cuttings.

The letters received, asking about growing Evergreens from cuttings, were referred to our correspondent at "The Pines," whose reply was included in the "Notes" sent last month, but were crowded out. He wrote: "I have been putting in quite a lot of cuttings of Evergreens, and I think if it were known how readily some evergreens were raised from cuttings, many more would grow them. I say *some* evergreens, as not

all can be propagated in this manner, but fortunately it is generally the case that the small neat kinds suited to small grounds, that grow most freely. Knowing that nurserymen have houses especially for the propagation of conifers, amateurs are deterred from attempting it in a small way. I have grown a few each year, for several years, as it is very convenient to have a stock of nice little plants to give away, or to use in exchanging with one's friends. Arbor Vitæs are among the easiest of trees to raise from cuttings. The common Arbor Vitæ is generally popular, but it is a waste of ground to grow this, if the

Siberian and Pyramidal Arbor Vitæs

can be had, as these varieties are quite as hardy as the original, and very much handsomer. As an illustration of the ease with which these Arbor Vitæs take root, last fall a friend sent me three small bits in a letter, for a name; though they had been cut two or three days, I stuck them in the sand of the greenhouse bench, and all three took root. To manage a quantity of cuttings, I use what the florists call a "flat," which is a box about 3 inches deep, made by dividing a soap-box. This is filled with sand, and in November cuttings about three inches long set in thickly, and the box put in the cellar until spring, taking care that it does not get dry during the winter. In the spring the boxes are set where they will be shaded during the heat of the day, and where they can be watered as needed, and in a few months the majority of the cuttings will be rooted. Other kinds can only be rooted by the application of heat, and if one has no greenhouse, a hot-bed can be made to answer. While some species root readily, others of the same genus do so with difficulty; sometimes a variety cannot be propagated by cuttings, while the type will readily grow in that way, and vice versa. All these matters can only be learned by experiment.

Blackberries in Indiana in 1874.

BY STEELE BROTHERS, LA PORTE, IND.

In accordance with the request of the Editor, we send some items about the varieties of Blackberries cultivated around here.

There are but two varieties much cultivated; the Kittatinny and the Snyder. There are some Lawton and a few Wilson's Early. All varieties bore abundantly this year. But it was the first full crop in three years. Last year all varieties were so much injured by the winter, that there were very few berries. In 1873 the Kittatinny did not bear at all. The Snyder not half a crop. The Snyder is a trifle more hardy than the Kittatinny, but not *perfectly* hardy with us. On our place they were killed the winter of 1871–72. And were generally so badly injured in the winter of 1872–73, that they did not bear half a crop. They were not killed outright like the Kittatinny, but grew and blossomed in the spring; more than half the canes, before the crop was grown, died, and the berries dried up. We picked the past season from two rows of Wilson's Early, each about 275 feet long, a little over 10 bushels of berries. Being so much larger and finer looking than any other kind, they sell very readily. But after people get acquainted with them, they almost always prefer the Kittatinny on account of its superior flavor. The Kittatinny, with us, will hardly average as large as the Lawton, neither is it here quite equal to it in flavor, when both are fully ripe. But the Kittatinny has the advantage of being eatable two or three days before it is thoroughly ripe, while the Lawton is *very* sour until it is just ready to drop off the bush. The Snyder is small, not averaging over two-thirds the size of the Kittatinny, nor is it equal to that in flavor. This we have proved by the following trial:

A young man who had known the Snyder from the first, was always praising its superior flavor. To test the matter, we picked a quantity of each kind, Kittatinny and Snyder, being careful to have them as nearly alike as possible in size, shape, and ripeness. We had him try them without knowing which was which. He decided that the Kittatinny was very much the best berry. And this is the general opinion, if prices are any criterion. This season the Kittatinny sold readily at 15 cents per box, when the Snyder only brought from 10 to 12½ cents. Some claim that the Snyder has not so much core as the Kittatinny. But taking both of equal size and thoroughly ripe, the difference in core is so small as not to be perceptible, except to a very critical judge. The Snyder has one advantage over the Kittatinny, it is a more vigorous grower, for the first two or three years. This, if set out in the spring, will bear a good many berries the next year. But the Kittatinny will not do much under two years. The *perfect* blackberry for us, has not yet been brought here. What we want is a berry that is equal in size and quality to the Kittatinny, and perfectly hardy. If it should be thornless, so much the better.

We stop our blackberry canes at from 3 to 4 feet from the ground, and never had any trouble with premature blossoming. We do this once, and then let the side branches grow all the season. The following spring we cut these back to about a foot.

The Respiration and Growth of Plants.

BY PROF. ASA GRAY.

In the Gardeners' Chronicle of Nov. 28, we have at length a clear and good abstract of Corenwinder's paper on Respiration and Digestion in Plants. Respiration, in plants as in animals, is an oxidation of the carbonaceous matters, and goes on continually, increasing or diminishing, however, with the activity or repose of the plant or animal. It is manifested, and its amount measured, by the giving off of carbonic acid gas. Digestion or assimilation is the reverse process as respects the storing up of carbonaceous matters, through the decomposition of carbonic acid, and is evinced and measured by the evolution of oxygen gas. In growing buds and shoots, and in forming foliage, the process of respiration is the most active. The plant—as we should put it—is then doing active work, and work means using up of material and force. Just as it costs the farmer a part of his crop to raise it and take it to market, so it costs the plant a part of its product to move and re-arrange its particles when it grows. This work is attended by the giving out of carbonic acid in increased amount, for the same reason that the breathing is quickened by running up a hill. In the developed foliage, outspread in the light, the work of digestion or assimilation is the principal thing; and the result is the making of material for growth. This work also uses up some already formed material, converting its carbon into carbonic acid; but this loss is unperceived, being masked and overbalanced by a far greater gain. For every one particle of vegetable matter which is now decomposed into carbonic acid and water and given out, probably twenty or thirty are recomposed in the assimilating process out of carbonic acid and water, and the oxygen of the former given out; so that the net result as to the air is the setting free of oxygen largely, as to the plant, the increase of vegetable matter.

Besides the carbonaceous elements, there is the nitrogenous matter and the phosphates, and the like. These play the most important part in growth and in all vegetable action. They are accordingly most abundant in young and growing parts, or in parts preparing for future growth. A Lilac leaf dried in April was found to have nearly 28 per cent of nitrogenous matter to nearly 68 of carbonaceous; a Maple leaf at the same season as much as 41 per cent of the former to 53 per cent of the latter; but in October the nitrogenous matter of the Lilac-leaf was reduced to less than 9 per cent, of the Maple-leaf to less than 15 per cent. The phosphoric acid had decreased in a similar way. These precious materials, having served their purpose in the young and growing parts, had been economized, had been largely transferred to other new parts, and finally accumulated and condensed in fruits and seeds, to provide for the nutrition of the next generation, or, in the grower's hands to serve for the nutrition of another order of beings. The practical moral is, that young herbage and foliage are more nutritious, as well as more palatable than when old, as we well appreciate in the cases of a salad, beet-tops, spinach, asparagus, etc.; but that fruits and grains offer similar nourishment in a much more condensed form.

The Stock and Cion—Peaches.

Upon more than one occasion we have expressed our belief that much of the variation in quality, size of fruit, and time of ripening, that we see in different specimens of the same variety, is due to the character of the stock upon which that variety was budded or grafted. This is not a mere matter of scientific interest, but it is a question of dollars and cents to every orchardist in the country, and more especially to the grower of peaches, to whom more than to the one who raises apples and pears, the difference of a few days in the time of ripening is of the greatest importance, and may decide the success of his season's business. In July last, we published important testimony upon this point from Col. Wilkins, the great peach grower of Maryland, and since then other facts have come to our knowledge which point in the same direction. A gentleman of wide experience in pomology, and an accurate observer, who, though he has withdrawn from active life, still continues his experiments with fruits, raised among other new seedlings a peach which he especially desired us to see; he forwarded us specimens of his favorite seedling, and in the accompanying note remarked, "The samples I send you are from a tree originally a Hale's, which I budded in '72; it is now a beautiful bearer, equal in form and vigor to its parent; but strange to say, the fruit ripens *at least three weeks earlier*. So much for the influence of the stock upon the graft."—This led to a further discussion of the subject in our correspondence, and we quote the following from among other matters of interest contained in the letters of the writer, whose name, were we at liberty to give it, would be recognized as one to whom pomology is largely indebted. He writes: "That the stock influences the time of ripening is most true, especially when the buds or grafts are set upon established trees. An acquaintance of mine, a good observer, and a nurseryman on a small scale, (Mr. Ross, of Westfield, N. J.), showed me two apple trees, side by side, which he had grafted with two pieces of the same cion; the variety was the King apple of New Jersey, which was then very rare, and having but one cion he cut it in two and grafted one-half with each. The stocks when grafted upon were some 3 or 4 inches in circumference; note the result: One of the grafted trees ripened its fruit six weeks earlier than the other! I have seen the trees and the fruit, and am sure that the old gentleman was to be perfectly relied upon." Our correspondent says further: "In regard to your views about grafting or budding upon *improved* stock, that is the result of good seed instead of the wild Virginia seedling, I am decidedly of your opinion—I use nothing else; still I cannot go so far as to establish the difference between cling-stones and free-stones for stocks. * * * To resume, I would say place a *sound, well matured* bud or graft upon a healthy stock, and one which as near as can be ascertained, of the same season of blossoming and ripening." There are other matters of in-

A SETTLER'S PLUMPING MILL.—DRAWN BY R. E. ROBINSON.—*Engraved for the American Agriculturist.*

terest in our correspondence with this veteran pomologist, bearing upon other controverted points to which we may refer at another time. In reading these letters in which the ripe experience of a long life is expressed almost with diffidence, we could not help regretting the modesty which shrinks from the notoriety of publication, while hundreds, as soon as they get, or think they have, a solitary idea, make haste to rush into print with it.

The Primitive Plumping Mill.

The early settlers in this country who had no mills, as well as the pioneers of the present day, who are at a great distance from them, were, and still are, obliged to resort to various expedients to bring Indian corn, their chief and generally only grain, into an eatable condition. Perhaps the simplest method of preparing the grain, is to make what is known as hulled corn; the corn is boiled in lye from wood ashes, until the hull or skin of the grain readily separates; it is then washed and stirred to remove the hulls, soaked in successive waters to remove all traces of the lye, and then boiled until tender. Even at the present day the Mexican peasantry prepare their corn in a similar manner; they remove the hull by the use of lye, and then instead of boiling the grain, they grind it to a paste on a stone called a *metate*, which is the chief article of furniture in every Mexican kitchen, (which usually includes parlor and bed-room); this is a slab of hard stone, about a foot wide, and two feet long, elevated at one end by legs. The soaked grain is placed upon this, and by the use of a sort of stone rolling-pin moved briskly up and down, it is ground to a paste; this is then patted out into a thin cake, and quickly baked upon an earthen or iron plate, beneath which are live coals. These cakes are called *tortillas*, and are the staple bread all over the country; they are sometimes made of wheat, but generally of corn. This method of using corn is purely Mexican, and no doubt derived by the Spanish settlers from the aborigines. While hulled corn is pleasant as a variety, and is at the present day sold in New England towns as a luxury, it becomes very tiresome as a regular food, and a poor substitute for corn cakes or bread made from meal. To obtain meal when a grist mill could only be reached by long journeys through the woods, over roads that were little more than foot-paths, or by a long voyage in a canoe or dug-out, the early settlers had recourse to the simple contrivance shown in the engraving. This is called the plumping mill, ("*plump:* to fall suddenly or with violence,") and is made by burning and digging out a cavity in a hard wood stump, until a rude mortar is formed; then a long and heavy pestle made also of hard wood, is attached to a long spring pole, and thus is formed a rude machine to be worked by one-man power. A slow and tedious method of obtaining meal, but one which many hardy pioneers have been content to follow until a better way could be found. It is a curious fact that the first patent granted in England, to the specifications of which drawings were attached, was for a kind of compound plumping mill, to be worked by horse or water-power, though some might find still more curious the fact that this invention was made by a woman. We have seen a copy of the original drawing at the Patent Office in Washington, which shows a row of 5 to 12 mortars, according to the kind of power used, the pestles were worked by a revolving shaft, the teeth upon which lifted the pestles and let them fall. The patent was granted in 1715, to "Thomas Masters, of Pensilvania, Planter, his Execrs, Admrs, and Assignees, of the Sole Use and Benefit of A New Invencon, found out by Sybilla his Wife, for the Clearing and Curing the Indian Corn Growing in the Severall Colonies in America, etc."

Wood Sorrels—Oxalis.

Every autumn we see in the seed stores a box or pan of tiny bulbs, none of them larger than a hazel-nut, and some much smaller, marked "mixed oxalis," and later in the season, when the hyacinths, tulips, and other bulbs, are nearly all sold, the oxalis bulbs seem to be about as numerous as at first. From this we infer that amateur flower growers do not purchase many oxalis bulbs, which we are quite sure they would do did they know the capabilities of these insignificant looking bulbs, and how much pleasure they can afford at a small expense. There are a few native species of oxalis, the common yellow-flowered, (*O. stricta,*) with its clover-like leaves on erect or trailing stems, is common everywhere, and often a weed in gardens, and two others, with leaves and violet or reddish flowers, proceeding directly from the root, are found in woods and rocky places. The majority of the cultivated species are from South America, and the Cape of Good Hope; some are shrubby, others are herbaceous, with fibrous roots, and others are bulbous-rooted; only the last-named can be procured at the seed stores, and there is among them a sufficient variety to meet the wants of the amateur grower, as they include species which have long and short stems, broad and narrow leaves, and white, yellow, rose-colored, crimson, and variegated flowers, some of which are fragrant. There are few flowers that do quite so well in window culture as when grown in the greenhouse, but with proper care the species of oxalis will be found quite satisfactory, and we can advise those who never tried them, to procure a few bulbs of each of the leading sorts next fall, as soon as the dealers receive their stock, as they need to be planted early—in September if they can be had. The pots need plenty of broken crocks for drainage, then some fragments of dry cow dung—say a fourth full, then good garden soil to fill the pot. One, three, or half-a-dozen bulbs, according to their size, are put in a pot, pressing them down sideways into the soil an inch or less, according to their size; then press the soil down firmly, and set the pot in a shady place; no water will be needed until the plants begin to grow, unless the soil should get very dry. When the plants are growing, give them plenty of light, and water according to their needs. When the flowering is over, and the leaves begin to fade, stop watering, and set the pots in a dry place where they will not freeze, and out of the reach of mice; the bulbs may be left in the earth until the season of re-potting; they will be found to have increased in number, some of them having bulbs far below the surface. Out of over a hundred species and varieties in cultivation, the dealers do not import more than six or eight, and then provokingly put them together, and sell them as "mixed oxalis." Insist on having the varieties distinct and named. Probably one reason why so few persons buy oxalis bulbs, is because they are offered in mixed lots; all sensible people wish to know exactly what they are buying, and if a plant has not a distinct name, they do not care for it. Mixed bulbs and mixed seeds are a nuisance in most cases. A few of the generally obtainable varieties are here enumerated:

THE GŒTHE PLANT.—(*Chlorophytum Sternbergianum.*)—(*See next page.*)

THE VARIOUS-COLORED OXALIS.—(*O. versicolor.*)

THE VARIOUS-COLORED, (*Oxalis versicolor*).—A pot of this in full bloom in the greenhouse reminded us to say a word in favor of these plants, and it furnished material for an engraving, which shows the free-flowering character of the species; for the convenience of carrying, it was tied to sticks, and was unfortunately drawn in an unnatural position. It has a remarkably drooping habit, and hangs over the sides of the pot in the most graceful manner, and is well suited to a suspended pot or basket. The leaves consist of three very narrow leaflets, notched at the end; the flowers are single on their slender stalks, and about an inch across. In all the species the petals are twisted or convolute in the bud, each having one edge directed inwards, and overlapped by the preceding petal, and its outer edge overlapping the next one, as in the diagram, (fig. 1), of a cross-section of a flower: this is not only the position of the petals in the bud, but that which the flowers take at night, and as most species open only in the sunshine, they are on cloudy days more or less closed in this spiral manner. When the Various-colored Oxalis is fully open, it is white within with a yellow eye; the under surface of each petal is white or slightly tinged with rose, and marked on the margin with a narrow bright pink or red line or stripe. When the flower is in bud, or completely closed, it appears as if entirely red, but when only partly

Fig. 1.—SECTION.

closed, these red lines make it beautifully striped. Though not so large-flowered and showy as some others, this is, to our fancy, the prettiest of all, as it presents in its buds, its partly open and fully open flowers, a pleasing and everchanging variety.

BOWIE'S OXALIS, (*O. Bowiei,*) is one of the largest and finest species; it has large, thick leaves, and flowers in clusters of 6 or 8 on a strong stalk; they are nearly two inches across, and rose-colored. This is the earliest flowering species, and imported bulbs are usually injured by having started to grow. Some florists furnish it in pots, and it is best to get it in this way.

THE FREE-FLOWERING OXALIS, (*O. floribunda,*) has rosy-pink flowers, produced in the greatest profusion, and continuing for a long time.

THE YELLOW OXALIS, (*O. flava,*) has leaves with 6 to 10 narrow leaflets, much like those of *O. versicolor*, and large solitary flowers which are yellow, sometimes with a reddish edge.

THE GOAT'S-FOOT OXALIS, (*O. caprina.*) so-called because its leaflets have somewhat the shape of the

Fig. 2.—OPEN.

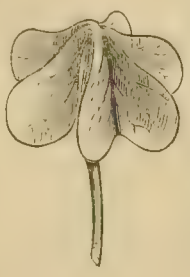


Fig. 3.—CLOSED.

print of a goat's foot, has also yellow flowers, which are in large clusters, and somewhat fragrant. This has very small bulbs, and both leaves and flowers are exceedingly sensitive to light. This is sometimes incorrectly called *O. flava.* This list might be indefinitely extended, but as it gives examples of the different colors, it is sufficient to call attention to an exceedingly interesting genus of plants, and one which may be grown with fair success by those who have no greenhouse.

A number of species are hardy in England, and we have most of these on trial, but as this is their first winter in the open ground, it cannot be said which, if any, will endure our winters.

Reference has been made to the sensitiveness of the flowers of Oxalis to light, and it may be added that this is more or less shared by the leaves; which in almost all species take up a sleeping position at night; the leaflets droop and fold, and in some the leaf-stalk also droops. In the accompanying diagrams, fig. 2 shows the day, and fig. 3 the night position of a leaf.

Window-Gardening.—The Gœthe Plant.

Some two years or more ago we were looking through the greenhouse of a friend, who stopped before a plant much like the one shown on the preceding page, as the Gœthe plant, and said, "There is a capital plant, which you ought to write up and make popular."—He picked off a couple of the little offsets borne upon the pendent stems, which were taken home and planted. Since then they have been growing on quietly in the greenhouse, and were nearly forgotten, until an article in the Gardener's Magazine brought them to mind; the plants were looked up, and as they were not so well grown as the one figured in the Magazine, we have re-produced the engraving of the English journal. The plant in question has for its name *Chlorophyton Sternbergianum;* chloro-phyton means simply green plant, not very descriptive surely, and a translation of the whole name would be "Sternberg's Green Plant"; but fortunately it has received a pleasanter name than that, and it is known in England as the Gœthe plant, for the reason that it was a favorite with the poet, who admired its patient endurance of the dry air, dust, and other troubles, that beset a plant kept in a window the year round. The plant belongs to the Asparagus Section of the Lily Family, which includes the favorite Dracænas, and that very beautiful and popular climber, *Myrsiphyllum,* which is so generally known as Smilax. The genus is a native of Africa and Australia, and contains but few species. This has graceful foliage of a fine green color, but the peculiar thing about it is its flower stems, which are very strong and slender, one or two feet long, and bear small and very inconspicuous white flowers; after the bloom is over, the flower-stems throw out young plants or offsets, as shown in the engraving, and these again produce flower-stems, which in turn bear other offsets, until on an old plant there is produced a perfect mass of threads and bright green tassels. In the moist atmosphere of the greenhouse the little plants form roots an inch or two long, and the plant propagates itself. The article in the Gardener's Magazine, to which reference has been made, is by a correspondent, Mr. Trussler, who has some very sensible talk upon window-plants, which we should very gladly reproduce did space permit; he restricts the number of really useful window-plants to a very few, and speaks of the Gœthe plant as the "best window-plant in the world." He criticises with proper severity those who write works upon window-gardening, and run through the whole list of greenhouse plants, "which are no more fit for window-culture than the oak-tree, the teazle, or water-lily," a remark which will apply to similar works in this country. For the benefit of our Philadelphia friends, it may be remarked that the "German Ivy" is placed among the select window-plants, and is spoken of as *Senecio scandens,* and not *Mikania scandens.* It is contrary to our custom to say much about plants that can not be readily obtained, though we sometimes do, as in this case, bring forward a plant that our florists ought to have. We advise them to import a stock of *Chlorophyton,* as they are very sure to have a demand for it, as it is one of those things which, if well grown, will sell itself. Our readers need not write to ask who has the plant, as we do not know, but any wide-awake florist will soon be able to supply their demands.

The Fumigation of Plants—Its Dangers.

BY PETER HENDERSON.

A lady has given me a "piece of her mind"—she has fumigated her plants and taken off every one of their leaves. As I recommend fumigation, she regards me as the cause of her trouble, and she expresses herself to that effect in words that I need not repeat. I have insisted upon, and do still maintain the need of fumigating with tobacco, not only to destroy that pest of the plant grower, the green-fly, and other insects, but to prevent their getting established. I have been particular in my advice to use it regularly twice a week, at the rate of about half-a-pound to every 500 square feet of glass, and I still adhere to this as the best and easiest way of keeping a greenhouse clear of insects. If Dr. Jones leaves Pat Molloy some pills, of which he is to take one every three hours, and Pat not only takes them all at once, but takes also whatever other pills he can find about the house, he will do very much as my correspondent did, and the death of Pat would follow not less certainly than that of the lady's plants. She had insects on her plants, and was bound to fix them, so she not only burned any quantity of tobacco, but, as she writes, "some sulphur." Her success was complete, for not an insect remains to feed upon the green pastures afforded by the leaves of her plants, and so thorough was the work, that the pastures are as leafless and dry as a maple grove in December; and for this the lady thinks I am to blame! While professional gardeners find fumigating with tobacco the readiest and safest method of ridding the plants of insects, it sometimes happens that amateurs, from not following the directions, or from want of experience, injure their plants. Such had better make use of tobacco in some other form, and we give two methods, which will be found quite as efficacious as smoking. One of these is tobacco in the liquid form, prepared by steeping one pound of tobacco stems, (such as are usually thrown away by cigar makers,) in about five gallons of water, this gives a liquid about the color of strong tea, which, if syringed over and under the leaves of plants twice a week, will effectually prevent any injury from that pest—the green fly. The other is to use tobacco dust, which is the sweepings of tobacco warehouses, and a very cheap article. This is most effectively applied on rose bushes or other plants out doors in the morning when the dew is on, or if used upon plants in the greenhouse, they should first be syringed, so that the dust will adhere to the leaves. No special quantity is required, only care should be taken that the dust is distributed among the leaves pretty thoroughly, as no injury will result to the plants from its application, no matter how much is applied.—For insects upon fruit trees, roses, and other shrubs, outside, tobacco dust is an excellent and cheap application. It is sold in quantities as low as $5 per hundred pounds, and is retailed in packages at 10c. per lb, by most of the agricultural and seed warehouses. I must here enter a protest against the use of the fumes of burning sulphur in the greenhouse. When sulphur is sprinkled upon the hot-water pipes, or upon that part of a flue, the temperature of which is not much over 200°, it slowly vaporizes, and may be used with benefit, but when set on fire, as was done by my correspondent, whose disastrous experience called out this article, the most corrosive acid fumes are given off, which, in even small quantities, are destructive to plant life. I remember a case in which the person in charge of a grapery, loaded with nearly a ton of ripening fruit, wishing to destroy the red spider that had begun to attack it, opened the door at each end of the house, put a pound of sulphur on a red-hot shovel, and walked through the house with it. Every leaf and every bunch of fruit were destroyed, and the vines permanently injured. Don't *burn* sulphur in a greenhouse.

SPARROWS AND FRUIT-GROWERS.—Many Europeans have predicted that the introduction of sparrows into this country would ultimately be regretted. That they destroy insects there is no doubt, but their work is not entirely beneficent; and melancholy accounts have been told of loss to the farmers by the havoc the sparrows make in their grain. In France the sparrow appears as an enemy to the pear-grower, and unless the trees are at a long distance from any houses, the sparrow being an eminently stay-at-home bird, they often have during the winter their fruit-buds attacked by the sparrows, and one case is mentioned in which the trees upon a place, which usually produced an abundance of pears, one season did not show a single flower, every bud having been destroyed by these little birds. Their attacking the buds has been attributed to thirst, but in this case a stream ran the whole length of the orchard. Prof. Levesque, of Cherbourg, in experimenting with methods of preventing this trouble, found that when the fruit-buds of the trees were painted over with red lead and water, the birds would not touch them. That method will do for France, where pears are reckoned by the dozen, but with us who estimate by the barrel, it would be of no use.

Cheap Manures for Market and Farm Gardens.

BY J. B. ROOT, ROCKFORD, ILL.

We frequently read that "out West" the farmers burn their straw, and move their barns to get away from the manure. I am so unfortunate as not to live in such a neighborhood, but on the contrary, find my neighbors just as anxious to "buy, beg, or steal" manure, as I am, so that after getting all the stable manure I can, I am still short, and compelled to seek other fertilzers. While using in greater or less degree all of them, none have proved so cheap and so profitable as green manuring, *i. e.*, growing crops to be turned under before maturity.

In sections where clover does well, that is of

course one of the best, but in this latitude rye has been my most profitable green manure, and I think is especially adapted to gardeners' needs. Some years ago just at planting time, I found myself short of suitable land for still another variety of seed melons, which I was obliged to grow, and leased ten acres of land upon which was growing a crop of rye. I turned under the rye with a chain on the plow, about the middle of May, and planted Nutmeg Melon. The occasional straws sticking up, gave the field a ragged appearance for a time, but when the mid-summer drouth was upon us, and other fields succumbed, this one looked as fresh and vigorous as could be, and in fruiting even excelled the promise its appearance gave. The yield of seed was more than one-half larger than on similar land in good heart, but not green manured. I have practiced green manuring ever since, and always with satisfaction. Its benefit seems to be due not only to the available fertility it furnishes, but also to its mechanical effect on the soil, and thus maintaining moisture through our worst drouths. I sow rye thickly—about 6 pecks to the acre—and early if possible, so that the plants shall stool out before winter, endure the exposure better, and make a quicker and larger growth in the spring. If any coarse manure can be spared, we spread it broadcast during the winter. It protects the rye from winter killing, and like all winter and spring top-dressing, induces increased growth, and both directly and indirectly helps the subsequent crop.

Rye seems especially adapted to the farm gardener's use, since a large portion of his crops are out of the way in time to sow it, and moreover a number of tender vegetables can not be planted until well into May, by which time the growth is as large as can readily be turned under. In this way it utilizes the land during that portion of the year, when it would otherwise be idle, and in which no other crop can be grown. Upon the farm too it comes in nicely, if the succeeding crop is to be corn, roots, or late potatoes, and more particularly sowed corn for fodder, for which it seems to be especially adapted. Even after corn I succeed well with it, sowing it broadcast and cultivating it in leaving the corn hills standing, as they gather snow and help to protect the rye in winter.

I have sown peas—common field varieties, Marrowfats, or any damaged seed of tall varieties—after early potatoes, even as late as middle of August, and when at their largest, some time in October, turned them under, and used the ground for early spring planting, and found it excellent. It is superior to rye only in this respect, that the ground is available for the earliest plantings.

Buckwheat makes an excellent manure, when the ground is ready for it in season, being of quick growth, great bulk, and permeating the soil with roots, while the tops cover the surface and choke out all weeds; but it must be grown and turned down between frost and frost, at just the time when every foot of the gardener's soil is occupied, so that I have found but limited use for it, except on very poor soils which were unavailable until more heart could be given them.

Sowed corn is subject to quite the same commendation and criticism. Each is excellent in fitting land for turnips, grown in place of a summer fallow. Upon land too poor to sustain a crop, being a light gravelly soil with little vegetable matter, I have sowed corn thickly in May, and turned it under early in August, and then sowed Marrowfat peas, which were turned under early in November. These gave sufficient substance to the soil to mature excellent crops of lettuce and flower seeds the next season, receiving in addition a slight top-dressing of fine manure. I think green manuring especially valuable on light soils.

Of course I would myself, and would recommend to others to get every fork full of manure to be had, and apply it. And yet upon the same land I would in addition apply green manure whenever practicable. The labor of applying evenly 40 loads of manure per acre, is considerable. All this is done more evenly by the green crop. Seed and labor together, cost me but $3.50 per acre. I can not say that it adds as much fertility to the soil as 40 loads of manure, but I do say that in our drouthy seasons, it produces as great an increase of crop as do 40 two-horse loads of good manure. How much of this is due to its ability to resist drouth, and how much to increased fertility, I can not say. It certainly pays to practice it, and to practice it largely, even on the land well supplied with stable manure, as that increases the vigor and growth of the green crop, which is immediately with additions returned to the soil.

All these crops are so heavy that they must be "chained down," *i. e.*, a heavy chain is hung from the end of the whiffletree cross-bar to the plow beam, with slack enough so that it drags just ahead of the uprising furrow, and thus pulls down every stalk into the empty furrow as nicely as it could be laid by hand. With this as much can be neatly covered as the empty furrow will hold.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

"Sex in Education."

Those who have daughters to educate, ought to read this book. It is not a new one, having been before the public at least a year, but it has just fallen to my lot to give it a careful reading—the more careful because the notices of it which I had seen in the papers, were mostly calculated to prejudice me against it. But the book seems to me a very useful one, and I should suppose that its author has at heart the true happiness of woman, as well as the welfare of the race in general. He would not limit the intellectual advantages of women, but he would so arrange these, that girls would feel encouraged to exercise and cultivate their minds in such ways as do not conflict with their natural and healthy development as women.

There are so many other things that hinder the healthy growth of girls, and destroy the womanly powers of women, that it seemed at first a little cruel when Dr. Clarke, of Harvard University, pitched upon this particular one—a wrong method of education—and spoke so strongly. But he sees clearly the other causes of woman's ill health, and speaks cordially of the new dress reform movement, and of the need of dietetic and social reforms. He takes one thing at a time—sex in *education*—and writes as though he has no "fear of falling into his own ink-pot," as Emerson says. It is no part of his work in this volume, to discourse of the evils that war against womanhood in later life, so a few criticisms which some of us elderly over-worked women have made, were uncalled for.

The law made plain by Brown-Sequard, in his lectures on the nerves—that *the human body can not do two things well at the same time*—is the basis of Dr. Clarke's argument. He thinks that one reason why women suffer very greatly from all manner of distressing female ailments, is because girls are put to school and required to do too much brain work, and to do it too regularly and persistently during those years, between thirteen and twenty-five, when nature is seeking to develop and perfect in them, that wonderful reproductive apparatus, so essential for their own happy destiny as women and as mothers of the human family.

It is to be hoped that those who read the book, will have sense enough to apply the laws of health and growth there explained, to all departments of education, physical, moral, mental, social, industrial, etc. Though a very useful book in its way, and at this time, it is by no means "the whole truth, and nothing but the truth." I did not find in it that "coarseness," and "insulting tone toward women," which some women have professed to discover—less coarseness indeed than in some of those reviews. The author does not write as one who thinks of women as "weighted by her sex," in the race of life, nor does he seem to consider woman entirely from the physical stand-point. He speaks of essential and distinctive womanhood, as a source of great and peculiar power, in intellectual and spiritual life, when *it*, (or sex itself), is not "weighted" by excessive burdens of labor or care. In speaking of the delicacy and dangers that accompany womanhood, he also speaks of its *corresponding privileges*, which none can understand better than those mothers, however poor and sick, who sometimes feel the most tender pity for fathers, because they can never possibly know the wonderful sweetness of little babes, as such mothers know it. He deserves the hearty thanks of cultivated women, for his testimony from his own medical experience, that maternity is not generally *unwelcome* to educated women.

A Rustic Porch.

Speaking of Rustic Porches, (*vide, Agriculturist* for Dec. 1874, page 462). I wish I had a sketch of the very simple but very pleasant porch over the doorway of a log-house, where some of the earlier numbers of these papers were written. I meant to make a drawing of the pretty cottage—pretty because symmetrical in shape, and ornamented by so tasteful a porch—but when I sat out upon the lawn admiring it and its forest background, I always had a babe in my lap, or close beside me. That is not the only log-cabin where the *Agriculturist* is taken, and for the help of log-cabin readers, also for the edification of those who wonder whether there truly can be such a thing as "love in a cottage," and dare not experiment for themselves, let me try to describe that little porch. Judging from memory, I think it was only five feet by three, the outer posts being set three feet from the house wall, and five feet apart. This gave room for two short low benches, each side the doorway, set facing each other. The posts were unpeeled tree-stems, four or five inches in diameter. There were four of these in front—the two corner posts and two between these, each a foot from the corner posts, or three feet apart. The whole—the sides and front—except the opening in front three feet wide for a passage, was enclosed with a coarse lattice work of unpeeled hickory twigs, from an inch to two inches in diameter. These twigs were nailed diagonally from post to post, about eight inches apart, interlacing each other, making diamond-shaped openings or lattice work. Two posts set against the house wall, five feet apart and opposite the front corner posts, with poles across from one to another, the front posts being a little shorter than the ones next the house, gave the support for a slightly sloping shed or lean-to roof of boards.

There are few cottagers so poor that they can not have such a porch, for it is very quickly made, as well as cheap in materials. The house was pleasanter, even in mid-winter, for the presence of the porch, and in summer, when the wild cucumber vines and morning glories clambered over it and upon the roof, it was truly "a thing of beauty."

Patterns for the New Under-garments.

The Dress Committee of the N. E. Women's Club, advertise that they have taken rooms at 25 Winter street, Boston, Room 15, over Chandler's dry goods store, where they may be visited in business hours, or addressed by those wishing patterns or information. The price for a pattern of the chemiloon or the gabrielle underskirt, (or any single garment, I believe) is twenty-five cents. They also have cotton and woolen chemiloons for sale.

A reader of the *Agriculturist* has sent me patterns and a cambric model, of a combination garment of her own invention, which she calls the "Emancipation Suit." It is similar to the chemiloon, with the addition of a gored underskirt attached at the waist. The waist of the garment is cut quite long, and somewhat basque-shaped, goring out over the hips. The fronts are cut away over the bosom, and a full strip inserted—like an unlined yoke waist with a very wide belt—a belt shaped by the darts of the basque. These patterns are kept for sale by Susan Taylor Converse, of Woburn, Mass., I do not know their price.

I see that Mrs. J. G. Swisshelm, of Chicago, also comes forward as an inventor of a garment, which seems to be a combination of shirt and drawers,

which she calls the "chemlin." She also has patterns for sale—price twenty-five cents.

Without doubt, scores of other inventors of this sensible sort of undergarment might be hunted up.

Twelve years ago I made myself two cotton-flannel suits, which were high-necked waists and long under-drawers combined. I thought then that I showed my good sense by making the sleeves long enough to reach my elbows—for in those days a thin muslin or lace undersleeve was considered sufficient protection for a lady's arm below the elbow. It does seem now as though woman is at last to be *clothed*, and in her right mind. Hitherto the female human body has been made subservient to the display of drapery and trimmings. Before long we shall have it really clothed from head to foot, and then, when we show by our deeds that we believe that "the body is more than raiment," (here is a text for the Rev. gentleman who sent to the *Agriculturist* office for patterns of the garments mentioned in the December Topics,) then we shall begin to have some clear ideas of real beauty.

White Gems should always be made of the *best* of fine flour and new milk, with a little salt, beaten well together into a stiff batter, too stiff for griddle cakes—or into a soft dough, too soft for biscuit—and baked in a hot oven in gem pans, made hot before the dough is dipped in. These are the best of "warm biscuit," I think. You *can* put in baking powder, but do try them without.

Milk-Pans.—A Farmer's Wife writes: If the lady who thinks her way best for washing milk-pans, in a former No., will use a flannel cloth in the lukewarm water, she will find that it will facilitate the labor.

The Flying-Goose Patchwork.

I have been asked to give a description of "the flying-goose," and (as I think it is the very prettiest pattern for a silk quilt), I will endeavor to do so. Take two squares of silk, one light and one dark, about three inches square, (larger if you choose,) double each square diagonally across the center, and cut it in two. You have now two pieces of light, and two pieces of dark. Divide each piece of *dark* silk again in two. Join them as in fig. 1. Plain silks produce a better effect than figured ones. Join the sections as in figure 2. Each stripe should be uniform in color: e. g., light yellow center, maroon corners; — pale-pink center, dark-grey corners; — light-green center, dark-brown corners. Do not join your stripes together until you have enough of them completed to make the entire quilt; then lay them on the bed, and arrange them artistically to suit the eye before you attempt to sew them together; for you will find you will have to change their positions very often before they will quite suit you. When you are making them, the gentlemen will probably say "What in the world is the use of cutting all those pieces of silk to bits, just to sew them together again?"

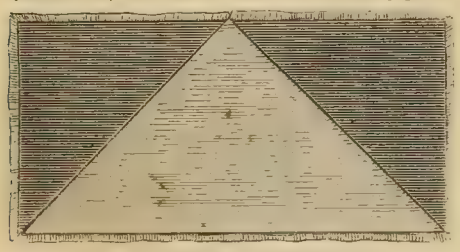


Fig. 1.—MAKING THE SECTION.

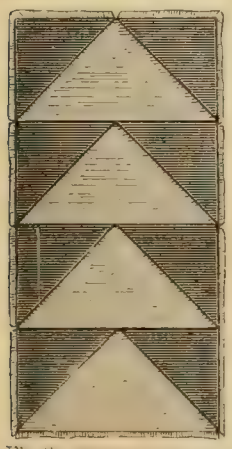


Fig. 2. SECTIONS JOINED.

But might you not better be doing that than nothing? And is there any nicer present—for the baby's crib,—for Papa's sofa, or for Mamma's bed—than a silk quilt? Fig. 3 gives you an idea of how the stripes look when sewed together. The number of stripes required will of course depend upon the size of your original square. A. S. N.

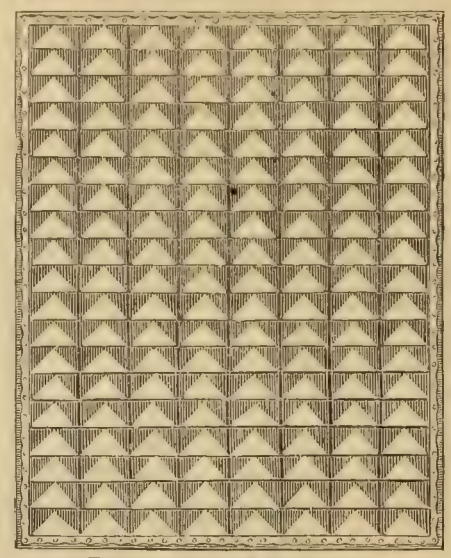


Fig. 3.—THE QUILT COMPLETE.

Kindling Fires—"Fools vs. Philosophers."

The trite old saying has it, that "it takes a fool or philosopher to build a fire well."—How this adage originated, or why it is used, we can not tell; perhaps it means that a fool blunders into it, and the other party does it "philosophically." Fire-heat is produced—or evolved, brought out, made sensible—by a chemical combination, that is, by the union of the oxygen of the air with the carbon or coal of the wood. These two elements combine, producing carbonic acid gas, which goes off into the air in an invisible state, and the union of the two gives out heat that was before *latent* or insensible. Only one-fifth part of the air is oxygen. The other four-fifths are nitrogen, a substance that does not unite with the wood, and therefore it does not help send out heat. To make fire burn faster, we blow it, that is, drive more air upon it, and of course more oxygen. (The chemist sometimes makes an artificial atmosphere of oxygen, containing no nitrogen. In this wood will burn intensely, and even a piece of iron will burn in it.) To save blowing with our lungs, or with a bellows, we construct chimneys or stove-pipes. Warm air is lighter than cold air, and rises up just as light substances rise in water. As this air rises in the confining pipe or chimney, cold air rushes in to take its place below—it is thus *drawn in* instead of being blown in. This draft, bringing more air and therefore more oxygen, makes the fire burn faster.

In starting a fire, the thing to be aimed at is, to make the air drawn in by the upward draft *concentrate just where the fire is still feeble.* In a stove or furnace put the kindlings, and start the fire close by the small opening, so that the inward draft will and must strike right upon the point where the fire is kindled. If it be started back a few inches, only a part of the incoming current will hit the fire, the rest will go round it. In a fire-place, put the larger sticks in rear and front, and so arrange the small stuff that the rising current of air will be compelled to come right through it. Arrange the larger fuel to be ignited so that the first fire will be drawn between pieces lying near enough together to help warm each other. Very often, when a fire is to be started over a wide grate in a stove or furnace, it is well to cover up part of the grate with flat pieces of wood, or ashes, or paper, so as to concentrate the draft of air at the point where the fire is to be started. As it increases, the wood or paper will be burned out, or the ashes can be raked out. In a broad bottom furnace, we often fill up one side, or all around the outside, with ashes and cinders, during warmer weather, so that in the remaining portions there will be draft enough to keep up a small fire. By noting the philosophy of concentrating the draft, above referred to, one can kindle a fire quickly and with a very little fine stuff. Unreasoning "help" often use a large basketful of kindlings, prepared with no little labor, or a peck of charcoal, to get a hard-coal fire started. By showing them the proper arrangement of fuel, a small quantity of shavings or splinters, with a few larger pieces of wood or charcoal, placed in a compact mass, and so that the current of air will strike them, will produce heat enough to ignite the hard coal immediately in contact, and that will soon extend a strong heat to the whole surrounding mass. A slight covering of fine ashes upon the surface of the hard coal, except right over the kindling point, will greatly help starting the fire. After the coal is well ignited through at one point, the ashes will drop down, or can be easily stirred out from below. We have often started up an almost extinct coal fire by spreading a few flat chips over the top, except just where there was a little fire left, as this concentrated the draft there and started it into new vigor. These are small items, some may think, but it is better to be the "philosopher" than the "fool"; and further, aside from the saving of fuel, how much is often lost in the morning's comfort, and in the day's business, because "the fire wouldn't start this morning."

The Daisy Mat—How to Make It.

The Daisy mat is made of Berlin wool, floss-silk, or cotton embroidery thread, or similar material that may be frayed out with a comb, to form the daisies and the fringe. It is made upon a frame either square, oblong, oval, or round. The frames are made of four strips of wood, an inch and a half wide, an inch thick, and twelve inches long; these are grooved upon one edge with a common grooving plane, such as is used in matching flooring boards. The grooved edges are then notched with square notches, regularly and evenly an inch apart, and the ends of the strips are fastened together to form a square frame, as shown in the figures 1 and 2. The complete frame is seen in part at fig. 3. The mat is made by taking the wool or other material of selected colors, wound for convenience into balls, and lapping it across the frame into the grooves; about 25 threads of coarse wool are needed in each lap and groove. With finer thread more will be required. When the frame is covered one way, it is lapped the other way, so that the laps cross each other. In lapping, the threads should not be stretched, but kept moderately loose, or the mat will shrink when finished. Then with a coarse linen or silk thread, the intersections of the laps are tied tightly, by crossing the threads, as shown in fig. 3, from *a* to *b*. It will much facilitate this work, if a coarse needle is used upon the thread, by which it is passed between the laps. When every crossing is securely tied, always upon the back of the mat, the frame is turned, and upon the other side a sharp-pointed pair of scissors is passed through about three quarters of the threads of the lap, exactly in the center between the ties. Three-fourths of every lap is thus cut through, at the front or upper side of the mat, exactly half way between the tie threads or intersections of the laps, as seen at

Figs. 1 and 2. FRAME.

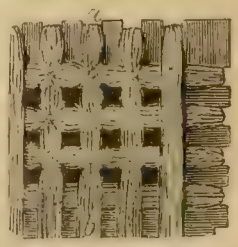


Fig. 3.—MAKING THE MAT.

fig. 4. The short ends of wool thus made, form the rays of the daisies, and when these are combed up with a fine-tooth comb, the edges become somewhat frayed, and form a ball very similar to the center of the flower of a daisy. The threads are then cut with a sharp penknife, all around the frame in the center of the groove, which frees the mat from the frame. The fringe around the edges is then combed out, and the mat appears as in fig. 5. By choosing proper colors and material, very handsome mats for various uses may be made. White floss-silk, or cotton, will make beautiful toilet mats, sulphur yellow also makes a delicate mat. Green and orange, red, white, and blue, or other mixtures of wool, make useful lamp mats, or table mats for vases, clocks, inkstands, and a very large variety of other uses. These mats may be washed many times, will stand very rough usage, and if securely tied, are almost indestructible by ordinary wear. The mat from which fig. 4 is drawn, has been in use since 1855, and is now as good as new. After being washed, the mats shrink somewhat, and are improved both in appearance and for service. For each size of mat, a different frame is needed, and by using a large frame with two-inch notches, woolen rags may be cut into strips as for rag-carpet filling, and used to make very serviceable door mats and rugs.

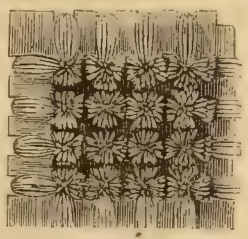


Fig. 4.—MAKING THE MAT.

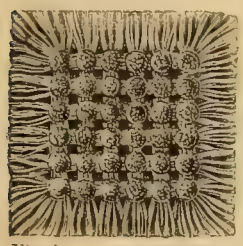


Fig. 5.—MAT COMPLETE.

When to Eat and How to Cook Cabbage.

Faith Rochester writes in reply to a note from the editor: Did I plan to have cabbage for breakfast in that bill of fare for a week, I sent off last week? I do not remember. I asked the family at dinner to-day, "Did we ever have cabbage for breakfast? and no one could remember that we ever did, but I could see that no one of them thought there would be anything improper in the proceeding. I remember that two things in particular interfered with the carrying out of that programme. One of the little ones took cold and was quite unwell, and ate very little of only the simplest food, and one went over to grandpa's for a few days, so that there was an unusual amount of "warming over" that week. Then grandpa brought us a chicken, which made two meals.

The editor "pitched into" me as follows: "Cabbage for breakfast! Shade of the departed Blot! But why did you not say how—raw—boiled—or that abomination to the nose and the stomach—fried. Cabbage for breakfast for women and babies should not stand unqualified and unexplained. I am not making fun at you, but really desirous to know how a woman who talks about hygiene, physiology, dress-reform, stomach-reform, and all—does eat cabbage for breakfast, if at all."

I suppose that the editor dresses his cabbage with vinegar, or has it cooked with vinegar—as we never do. [Nor we.—ED.] I should like the taste of it, but one tea-spoonful of it (or any preparation with vinegar) would surely give me a sick headache, as I learned long ago by repeated experiments. Of course it is not so with every one.

We like our cabbage cooked like cauliflower, and it is almost as good. It is cooked with milk, and I never dreamed that it was unwholesome. Like most vegetables of the kind, there is not much nourishment in cabbage, and it could not be substituted for graham bread or meat, but used with either, it supplies wholesome vegetable juices, and if palatable does good, as every harmless thing does which helps to make up a pleasing variety. Is it not so, my critical friend?

And why not for *breakfast?* I have lost my copy of that bill of fare, and the Jan. *Agriculturist* (which will contain it I suppose) has not yet come to hand. I wonder what other dishes were to be eaten at the same meal. Gems of any kind, or anything that will go well with cauliflower or turnips—as potatoes and beef. If cabbage (cooked as we cook it) seemed to me so hard of digestion, as it appears to be reckoned by the editor, I would as soon eat it for breakfast as for dinner. [Cabbage is one of the most nutritious as well as one of the most indigestible of vegetables, and quite unfitted for persons with weak stomachs. It contains about 92 per cent of water; in the *dried* state 83 parts of cabbage contain as much nutriment as 100 parts of wheat. When eaten raw, it digests in half the time it does when cooked.—ED.] It is a common experience with persons who get accustomed to two meals a day, that the heartier meal works best in the morning. "Grandpa"—who has had a life-long tug with his stomach, but who by great carefulness in late years has come at last to be stronger and healthier than ever before in his life—often says, "If I am going to have cake, give it to me in the morning, so that I can work it off." For supper he wants only his bread and butter, and some warm drink. As to the *propriety* of cabbage for breakfast, I have nothing to say. None of my readers suspect me of being much influenced by Fashion in such a matter.

How to Cook Cabbage.

Chop the cabbage head fine, or cut it as small as you can well with a knife. Half of an average head is sufficient for a meal. Put it into a kettle, and pour over it about a pint of *boiling* water. Cover it, and keep it boiling steadily, (not letting it burn dry by too hard boiling), for half an hour. Pour off what water remains—the cabbage itself supplies some water in cooking—and pour in a tea-cupful—or two if you like—of good milk, salting to taste. Let all boil up together, and it is done. If you put in considerable milk, it will be much liked if poured over "white gems" split in two.

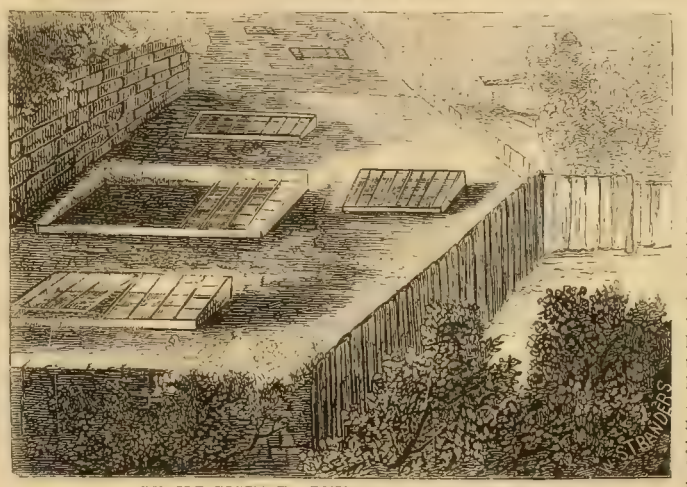
BOILED ONIONS WITH MILK OR CREAM GRAVY.—Put the peeled onions in a good deal of boiling water, and keep them boiling steadily for an hour. Pour off the water and turn into the sauce pan (for a dozen onions) nearly a pint of good milk, as creamy as you can afford. Salt to taste. When it boils up, thicken with flour stirred to a smooth paste in water.

BOYS & GIRLS' COLUMNS.

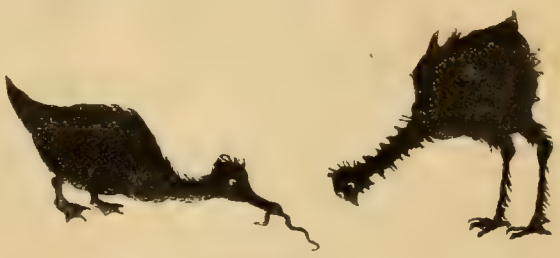
How we Grow!

When I was a "jacket-and-trowserser," the good woman who came and made up my clothes, was always cautioned to "allow for growing." This family of boys and girls has got to be so large, that the Publishers have been obliged to "allow for growing." You need not tell anybody, but I will quietly inform you, that the old folks have been pushed about in a most remarkable manner, to make room for you young folks. The Publishers have given you over one-half more room than you had before; yet in doing this they have not given the older readers any less, but on the contrary, they have more reading matter than ever before. So we are all better off. Father and mother will have more, and you youngsters will have more, and so we sail along in the new year with colors flying. Hurrah for the Publishers! Hurrah for the boys and girls! says THE DOCTOR.

441.—**Puzzle Picture,** and a good one, too, as we think, as it tells us something about the life of that Jack, dear to all boys and girls, who know the story of "The House that Jack Built." There was a "rat that ate the malt that lay in the house that Jack built," and we might think that he was a brewer, were it not that the idea of a farmer is suggested by "The cow with crumpled horn who tossed the dog that worried the cat that killed the rat that ate the malt that lay in the house that Jack built."—Until we saw this picture, we did not know that Jack was a gardener, but he must have been, and a good gardener too, with his close fence, his hotbeds, and his cold-frames. After you have sufficiently admired Jack's garden, perhaps you would like to see the "House that Jack built."—It is there in plain sight, and perhaps after you have once seen it, it will be difficult to help seeing it. It is generally the case with puzzle pictures that they never puzzle but once—but it is fun to see others bother about them.



PUZZLE PICTURE—HOUSE THAT JACK BUILT.



THE DISCOVERY.

THE PURSUIT.

THE LATEST FROM THE SEAT OF WAR.

Just a Bit of Nonsense.—Young folks like "nonsense pictures," and we have seen old folks

laugh at them. These pictures are what artists call *silhouettes*. May be you would like to know what silhouettes are, and why they are so called. They are generally solid black drawings upon a light ground, and in modern times were first made known by Etienne de Silhouette, who was in 1759 the French Minister of Finance, or what we call in this country the Secretary of the Treasury. But this style of drawing was known in very early times, and long before the Christian Era, vases and other pieces of pottery were ornamented in the most beautiful manner with drawings, made in this way. So after this bit of history, let us look at our nonsense silhouettes, which quite explain themselves. The early bird who found the worm, did not happen to be the cockerel. The progress of the story is well told, but there does not seem an end to it—perhaps you will say that, so far as the worm is concerned, the last picture shows that there are *two ends*.

"Green Boys."

We have seen a lot of city or village boys gather around a boy from the back country, and make fun of him, and talk about his "greenness," because he was not up to all their ways of acting, and very often ways of mischief. And very often the country-boy feels chagrined about it, and goes home quite sad.....Yesterday we were having a chat with some city boys, sons of wealthy parents, and in our conversation the word buckwheat was mentioned. We asked the boys when it was sown, how the plants looked, how they get the buckwheat flour out of it, which makes their nice morning's "flat-jacks"—or "flap-jacks," as some call them. Our country friends would have laughed at the answers. One large boy said they sowed buckwheat in the fall, and cut it the next summer, he believed. Another said, he supposed they sowed it the same as any wheat, and cut it and ground it the same, and he supposed it was only so called, because it was a kind first raised by a Mr. Buck. None of these boys could tell anything about the appearance of the plant or grain—though one thought it looked more like oats than like wheat. (They had all seen oats fed to horses, and seen wheat at the city grist-mill.) Now, were not these boys just as "green" as any country-lad that ever visited the city? The truth is, city boys are fully as "green" about things in the country, as country boys are about things in the city, and the country boys have the advantage of knowing less about mischief. It's all nonsense, for city boys to put on airs, and laugh at country boys, for the latter know a great many useful things which the former do not know, and if one of each class should be left a homeless, friendless orphan, the farmer boy, with his strong frame, his practical skill, and self-reliance, would stand the best chance of taking care of himself. Let the city boy and the country boy each have a mutual respect for what the other knows that he himself does not know—and remember that one is just as "green" as the other, when he gets into the other's territory. By the way, we know of a city boy who is collecting a cabinet of all kinds of grains and seeds, used in agriculture and horticulture, and is studying the habits of the plants. He takes two copies of the *American Agriculturist*, one of which he keeps, and from the other he cuts out all engravings and descriptions of plants, and keeps them with the appropriate seeds. That boy will not be so "green" when he goes out to see his country friends. This is a good example for many other city boys.

Magic and Magicians.

In olden times there were certain persons called *magi*, who professed to have relations with *genii*, and all sorts of supernatural beings, the existence of which very few persons now believe in. Their performances were called magic, and now-a-days those who exhibit very clever and astonishing tricks, call themselves magicians. These tricks

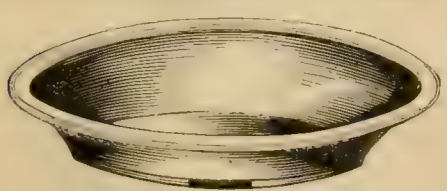


Fig. 1.—MAGIC PLATE.

are sometimes called *Legerdemain*, which is a French word for light of hand, and also sleight of hand. In most of the tricks of these performers of "magic," there is very little "sleight of hand," but they depend for the most part upon the implements used. Some of the performers are exceedingly clever, and at first sight quite bewildering; but if one knows how some of the tricks are done, and watches closely, he can generally find out how even the most mysterious of them are performed. These exhibitors do not pretend that their tricks are anything but *tricks*, and claim no relations with anything but their own ingenuity. There are stores in New York, where the apparatus for performing these tricks is sold, and in-

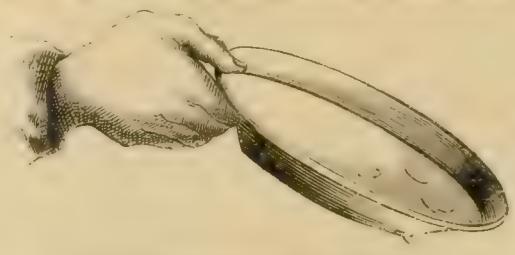


Fig. 2.—THE WAY THE PLATE IS USED.

struction given, from the simplest to the most difficult, and it is astonishing how very simple some of them are, when you know how they are done. Two very simple tricks are here shown, to give you an idea of the way others are done; one is the multiplying balls. A paper-box is shown, into which three small balls are put; the cover is put in its place, the performer shakes the box, and says "horum quorum sunt divorum," or any other nonsense, then he asks one of the company to blow hard upon the box, and at length opens it, and to the surprise of the bystanders the balls will be six instead of three. By a similar process he turns the six back to three again. Another of these tricks is the magic plate, which appears to be only a tin pie-plate. One of the company is asked for three cents, which are put into the plate; the performer then shakes them about, and perhaps holds the plate over the lamp, saying, "hokey, pokey, winkey, fum," or "hobbelum, gobbelum, sunt, rantobulum," or whatever such jargon he chooses, and then he asks the one who has placed the cents in the plate, to hold out his hand, and instead of three, he receives six or a dozen. These are the simplest possible tricks, and when one learns how they are done, he wonders why he did not see it all before. In the first trick, that of the balls, the box consists of a paste-board ring with two covers. Either

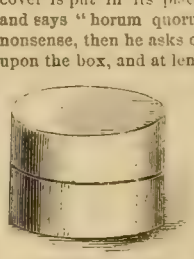
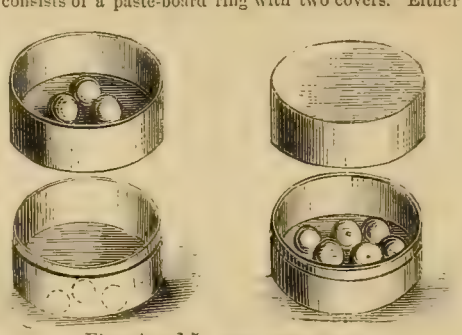


Fig. 3.—BOX.



Figs. 4 and 5.—THE BOX TRICK.

cover may be made to appear as the top, by holding the other tight, so that the ring will remain with that. Upon the inside of one of these covers three balls are glued fast, and in opening the box, this cover is uppermost, and must not be turned to show what is in it—three balls are placed loosely in the box, and after the talk already mentioned, the performer having in his movements turned the box completely over, what was the top, becomes the bottom, and on opening, six balls are seen instead of three, and as three of the balls are loose, it will not be noticed that the three others will not move. So the performer can repeat this as often as he chooses, provided he does not expose the three balls fastened to one of the covers. Fig. 3 shows the box closed, fig. 4 open, with the three balls put in; the others fastened in the other half; fig. 5 shows the balls at the second opening of the box. The money-plate is equally simple; it has a double bottom, and between the two bottoms there is room for the coin, which is put in at the hole shown in fig. 1. When the performer holds out the plate to receive the cents, he covers this opening with his hand, and while going through with his talk, he changes the position of his hand, as in fig. 2, so that when the coin is poured out, that beneath and that above the false bottom will all run out at the same place. Such simple tricks are capable of affording much amusement in a party of young folks, provided the one who shows them is skillful. A bungler should not undertake them. In performing such feats for the entertainment of your friends, always rehearse them, so that they will go off smoothly, and have on hand plenty of small talk, for one of the secrets of success in these tricks, is to occupy the attention of the spectators, and not allow them to examine your movements too closely. After you have created great wonderment in a party, you can make still more amusement, by showing them how readily they were deceived.

Aunt Sue's Puzzle-Box.

WHAT CITIES AND RIVERS MEAN, TRANSPOSED:

1. A planet. 2. A tree. 3. A vessel. 4. An animal. 5. A garment. 6. A hard substance. HERBERT J. K.

ANAGRAMS OF SCOTT'S CHARACTERS.

1. Dine sane Jane.
2. Tall Tom Idryo.
3. Hob O'Dorin.
4. Fruit rack.
5. Lean elf.
6. Fie! Gilbert B. Tibb.
7. Mr. Bosy -a tar.
8. Mr. George H. Clen.
9. Thadey Hewlit.
10. Drive on, Anna.

ELLEN M.

CHARADE.

When Rome was in her palmiest day,
And held an universal sway,
My first was not.
And now in this degenerate age,
—So say the learned and the sage,—
My next is not.
And yet 'tis often found in mint,
(I don't refer to juleps.)
It comes from buds of roses too;
My whole more oft from tulips. O. U. I.

SQUARE WORDS.

1.—1. A mineral. 2. A tree. 3. Erudition. 4. To produce. MOCKING-BIRD.

2.—1. Expanded. 5. Colorless. 3. A girl's name. 4. Approximate. RALLY B. P.

CROSS WORD.

My first is in silver but not in gold,
My next is in hoary but not in old,
My third is in light but not in dark,
My fourth is in Matthew but not in Mark,
My fifth is in pull but not in jerk,
My sixth is in smile but not in smirk,
My seventh is in staff but not in crook,
My eight is in volume but not in book,
My ninth is in warrior but not in fame,
In my whole you will find the composer's name.

NUMERICAL ENIGMAS.

1. I am composed of 13 letters:
My 1, 11, 12, 2, it is sad to need.
My 10, 3, 8, 9, is a wonderful instrument.
My 6, 13, 7, 4, 5, is needed to give it motion.
My whole is the name of a periodical. JOHN C. C.

(A very easy one.)

2. I am composed of 11 letters:
My 7, 6, 9, 6, 8, 6, 11, is a cape on the coast of Europe.
My 11, 6, 1, 5, 3, 6, is a city in one of the Eastern States.
My 8, 10, is a river in Europe.
My 4, 10, 7, is a mountain in the United States.
My 2, 7, 6, 5, 6, is a Western city.
My whole is a city in England. VAU.

PI.

Lapin vilgin nad ghih gnikhint ear on omer,
Het meyloh yeatub fo eth dogo dol sauce
Si noge: rou capee uro luffare cinnecone,
Dan rupe glinoric hintbegar shoelohud slaw.
WORDSWORTH, Sep. 1802.

DIAMOND PUZZLE.

1. Part of an apple. 2. A conjunction. 3. A Poet. 4. A vegetable. 5. A builder. 6. A pronoun. 7. One third of ten.

The central letters, perpendicular and horizontal, form a vegetable. YANKEE DOODLE.

ALPHABETICAL ARITHMETIC.

```
OEY)ANTYEAK(ODDET
    ANO
     ---
     OYEA
     ODUE
      ---
      YUNK
      YYKT
      ----
       OOO
```

NIP.

CONCEALED RIVERS.

1. Oh! Tom, Mabel kicked poor Carlo.
2. The poor dog ran down into the cellar.
3. I don't want to go! O! send Jim, won't you?
4. What is the matter? don't you feel well?
5. The cow hit Effie with her tail.
6. Mother, O! guess who is coming to tea.
7. Either Dan or Thomas Smith.
8. No, it is Dick Marshell.
9. Let us have some ale on the table.
10. There are dozens of bottles in the closet.
11. Dick and I said we would agree never to drink another drop of spirits.

RIDDLE.

I have no feet, and yet I'm ever going
From early dawn till setting of the sun,
And when the stars with silvery light are glowing,
My onward course as steadily I run.
My pallid face, devoid of all expression,
Yet bears full many a mark of "Father Time,"
My voice, my richest, best possession,
Oftimes rings out with merry, cheerful chime.
The busy housewife with her cares perplexing,
Looks on me as a counsellor and friend;
For when the days are hurrying and vexing,
Efficient aid my regulations lend.
I haste the traveller to the intended station,
Before the headlong train comes steaming in,
Ah! many a son and daughter of creation,
Through me are saved the sad "It might have been."
Mine is a life of busy, ceaseless motion,
No recompense for services I claim.
In this fair land—in climes beyond the ocean
I'm known; dear children, can you guess my name?
MRS. LIZZIE MOORE.

ELLIPSES.

(Fill the following blanks with words pronounced alike, but spelled differently).

1. We —— were —— busy —— go.
2. The —— has not very long ——.
3. The —— had a silver —— in her hand.
4. He —— a hole in the ——.
5. I —— him with a —— for some ——.
6. They were staying —— the ——.
7. I would as —— eat a ——.
8. The young —— —— a grand display.
9. When you —— the —— do it —— for the ——.

AMBROSE M. S.

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

DOUBLE ACROSTIC.—B- el -L
O- hi -O
S- a -W
T -hre-E
O- w -L
N- el -L

DIAMOND PUZZLE.

A
A C E
B R O W N
T A V N T O N
A C O N C A G U A
S C R A T C H
T A G U S
S U M
A

CROSS WORD.—Valentine.

SQUARE WORD.—D A C E
A N A M
C A L M
E M M A

ALPHABETICAL ARITHMETIC. — 638)1749052(2741. (*Key:* Black Horse.

PI.—"Take the spade of perseverance,
Dig the field of progress wide,
Every stubborn weed of faction
Worry out and cast aside."

ANAGRAMS.—1. Accommodates. 2. Establishment. 3. Indispensable. 4. Reinstated. 5. Persistence. 6. Appropriations. 7. Disproportionate. 8. Transformation. 9. Fallacious. 10. Embarrassment.

ARITHMOREMS.—1. Vivid. 2. Seed. 3. Pass. 4. Ibex. 5. Yawl. 6. Fee. 7. Olio. 8. Rood. 9. Onyx. 10. Hoax.

NUMERICAL ENIGMA.—Robinson Crusoe.

Thanks for letters, puzzles, etc., to Joe, Denver, C. T., Clio, H. F. S., Edna M. L., M. J. F., Charlie S., and C. D. D.

Send communications for the Puzzle Box to Aunt Sue, Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Doctor's Talks.—About Blowing Soap-Bubbles.

The boys were quite convinced that they did not know *all* about soap-bubbles, and were ready to learn more. Supposing this would be the case, I arranged a little surprise for them, and had my soap-bubble toy prepared beforehand. I had them blow some fine large bubbles, as large as possible, and they did not fail to notice the beautiful colors they showed, but soon after they became large enough, and of course thin enough to display their tints, they would burst. I then took my bubble-toy and blew. A prolonged O-h-h! from all hands showed, that it was the most beautiful bubble they had ever seen. Even when quite small it was a perfect kaleidoscope of changing colors; and when I shook the bubble free, and used my arm for a battle-door, and the bubble for a shuttle-cock, and bounced it all around the room, you may be sure they were delighted. Then I made another bubble, and set it upon the mouth of a small vial, and put it upon the mantle-shelf as an ornament, and never was work of art so beautifully colored, as this rainbow-tinted bubble. It stood for several minutes, and would have remained longer, had it not been moved for a closer look at it. "Uncle," said Wat, "you have not got soap and water to make those bubbles with."—"O yes, I have," was the reply.—"Then there is something else with it, for just common suds would never make any such bubbles as those," said Art., and the boy was right. So of course I had to tell them all about it. In the first place, you must have the very nicest kind of soap, white Castile is the best; this is shaved up, and put into a bottle of rain-water, about two ounces of soap in a pint of water; the water is allowed to dissolve as much soap as it will, and the clear liquid poured off from the soap, which settles to the bottom. Then I take two parts of this liquid, and one part of *glycerine*, and mix, and this mixture I have in the toy. "But Uncle, could we not blow just such bubbles with our pipes, if we had this mixture?" asked Walter.—"Of course, you can, and I have prepared enough for all of you."—"But what *is* this glycerine?" asked Arthur.—"I was afraid you would ask me that." I replied.—"Afraid? Why?"—"Because it is rather difficult to answer, so that boys and girls will understand it, but I can tell you something about it. You will remember that I told you, [see article in January,] that in making soap, a *part* of the fat, oleic acid, united with soda, to make the substance we know as soap, the *other* part of the fat, which I did not then say anything about, is glycerine, and when the soda joins the oleic acid to form soap, the glycerine is left by itself, or 'set free,' as the chemists say. Whenever soap is made from fat, much glycerine is produced, though this is not the way in which glycerine is made for sale, as in soap-making it is so mixed with impurities, that it goes to waste."—

BUBBLE ON A VIAL.

"Then Uncle," said Arthur, "fat is oleic-acid and glycerine."—"Exactly, that statement is near enough to the fact for our purpose. Now here is some glycerine, you see how clear, and like the finest honey, it is."—"It looks good enough to eat."—"You may taste it."—"How sweet! Almost like honey!"—"That," said I, "is why it is called glycerine, as it is named from the Greek word *glukos*, which means sweet." Of course they thought it very wonderful that fat should contain such a sweet and fine looking syrup-like substance, and one too that would readily mix with water, and I had to tell them that the most remarkable thing about it was its not drying; a surface smeared with glycerine will keep moist day after day, and not dry, and that is one reason why bubbles made with a mixture of this lasted so long, was that the thin film of the bubble did not evaporate so rapidly as when soap and water alone were used. After all had tried the glycerine mixture, and blown the most magnificent bubbles imaginable, they wished to know how I managed to put the bubble on the vial, which is a very easy, and when the bubbles are made with this mixture, a very pretty thing to do; I have heard of bubbles made in this way lasting for several hours, if placed under a glass shade, but I never tried it. To put the bubble upon the vial, you first thoroughly wet the neck and rim of the vial with the liquid, then blow a bubble, and when it is still small, touch it to the mouth of the vial; if the bubble breaks, try again, but if it does not, and with a little care it will not, go on blowing, and when the bubble is large enough, lift your pipe away in a one-sided manner, just as you do when you throw a bubble off from the pipe. A few trials will make it very easy. Walter tried it, and after a few attempts succeeded.—"But," said I, "your bubble is not a handsome one, it is only a little thing, and has no fine colors. You must make it larger if you would see its beauty."—"Larger, indeed," was the reply, "the bubble is done, and I'd like to see any one make it larger."—"Easy enough, give me that bit of broken pipe-stem."—After thoroughly wetting one end of the stem with the liquid, I dexterously pushed it through the wall, or film of the bubble, and increased it to more than twice its former size, to the great astonishment of all the children. Indeed, if one is a little skillful, he can do many curious things with the glycerine and soap bubbles, and as for the chain of bubbles, blown with Mr. Bliss' toy, I have made fifteen, or more if they were small, but the weight soon becomes too great for the last one. "But uncle," one asked, "is not this glycerine very dear?"—"Not so dear as formerly, it is now made on the large scale, and sold at 75 cts. a pound, but in small quantities our village druggists sell it for about 10 cts. an ounce."—"I wish now, uncle," said Walter, who has something of an artist's eye for color, "that you would tell us how these bubbles are so beautifully colored—when you first begin to blow, the film is without color, and soon it breaks into as many beautiful hues as a—a—well, a peacock's tail."—"Can you tell me why a leaf is green and a flower white, yellow, or red?"—"No, except that they are made so."—"Well, then, the bubble is made so," I replied. "No, uncle, that won't do, because the bubble at first has no color, then when you make it larger it will show colors which keep changing and changing the more you blow, and when you get the bubble very large and thin, and expect it to be still handsomer, it seems to lose its color and bursts, now I would like to know why?"—The boy had asked the very question I hoped he would, but he touched a subject upon which the most learned men are not quite agreed, and I could only promise another evening to tell them something about it, at least enough to show that even a soap-bubble will suggest questions that puzzle the men of science. THE DOCTOR.

A Boy Asks Questions.

The boy is named Anson, he lives in Wapello Co., O., and he has some questions that he would like the Doctor to answer. That is right Master Anson, if you, and all the other boys—not to omit the girls—will ask questions about things that puzzle them, we shall have a right lively time of it. Master Anson asks two questions; one about heated air is a very well put query, and when I get through with the bubble talk, I hope to attend to that. If I forget it, ask again. Letters for me should be addressed "The Doctor," 245 Broadway, care Orange Judd Company. Here is our young friend's question just as he puts it: "I have noticed after putting horse hairs in water for some weeks, they would appear to be so many snakes, and would swim around in every direction. I would like to know how this could be, I do not believe that a horse-hair could turn to a snake."—Now this is a very curious case. Our correspondent says he has noticed something, and then says he don't believe what he has seen. I don't think that Anson wrote just what he intended to say. If he did put horse-hairs into water, and they did "appear to be so many snakes," and "swim around," why does he write to me about something his own eyes has seen, and ask how it could be? He, no doubt, meant to say that he has put horse-hairs into a pool, and afterward found something alive that looked like a horse-hair. I will state the facts in the case, and then our friend Anson may perhaps see where he failed to express himself just as he intended. It is a popular belief, because hair-like worms are found in pools and other places where horses drink, that the horse's hairs drop into the water, and there change into snakes. Now this matter is perfectly well understood, in the first place these snakes, so-called, are not snakes at all, but worms, and they no more come from hairs than colts are hatched from pumpkins. The "hair-snakes" or "hair-worms," as they are more properly called, are just as much distinct and independent animals as the horse itself. There is enough about them that is strange, without going to the hair story absurdity. These animals are called by naturalists *Gordius*. Perhaps you have read of Alexander and the Gordian knot, and these were so named from the way they have of making difficult knots of themselves. There are male and females, and the female lays eggs in the water—long strings of them. When the young Gordius is hatched, it is quite unlike the parent, and very minute, being only $^1/_{450}$ of an inch long. Now here comes the strange part. The water-beetles and such insects, being on the look-out for food, swallow an infant Gordius when they get a chance, and that is just what young Gordius wants, for inside the insect it can grow—just as a tape-worm grows in man—and by and by come out a regular "hair-worm," to keep up the story that horse-hairs turns to worms. No, Master Anson, your question about heated air is so well expressed, that I am not willing to believe you intended to say that you have really "noticed" that hairs turn to worms; but if you still think you have, you must tell us more about it. Do not think I am unkindly criticising you, for I would not discourage you from asking more questions, and when you look at your question as it appears in print, you will see that you have said rather more than you intended. Let me hear from you again. THE DOCTOR.

Valentine's Morning.

There is excitement in the household, the post-man has come with his letters, as he usually does, but why on this particular morning, the 14th of February, should all old and young rush to see what the letter carrier has brought, while on every other day in the year there is no such eagerness? It is St. Valentine's morning, and the youngsters, and some not so young, are expecting a valentine. Twenty-five years ago a similar scene might have taken place in almost any city house, and in the country, where there are no letter carriers, the interest would be shown in some other way. Even now, when the custom of sending Valentines is much less common than it was, the business of the Post-office is greatly increased on the 14th of February, and in some parts of the country the day is much more observed than in cities. Still young people of the present time can have little idea of how their parents and grand-parents regarded the day, and it is likely that before many years Valentine's day will be lost sight of altogether. Perhaps you would like to know something about the day and how it was formerly observed. There was once a very good man, who, in the time when people were made to suffer for their religious belief, was beheaded because he thought differently from other people. Then after he was dead, his goodness was remembered, and he was called Saint Valentine. All this happened in Rome, some 1,600 years ago, when they did very strange things. One of the customs of that time, was to put the names of all the girls, or as we should say now, young ladies, in a box, and for the boys or young gentlemen to draw out the names—a sort of social lottery you will see. Well, it was expected that each young man would be very polite and attentive to the young lady whose name he drew, for a whole year, when another drawing took place. As this ceremony was held on the birthday of St. Valentine, or St. Valentine's day, February 14th, the girl was the young man's "Valentine," and the youth was the young ladies' "Valentine." It was a harmless amusement, and was probably one of the few ways young people had in those old old times of having a bit of fun. In later times the custom of choosing Valentines by lot, was revived in France and England, and included married as well as single people, and those who were thus chosen as Valentines, were expected to make costly presents to one another, and sometimes great fun was made, by having a little girl drawn as the Valentine of one old enough to be her grand-father. One very learned man wrote in his diary some 200 years ago, that he was glad that he had that year drawn his own wife as his Valentine, and

he should not be put to a heavy expense for presents. At length the custom changed, and young ladies wrote pretty little verses, and sent them with no other signature than "Your Valentine," to the young men, who, if they were lucky enough to find out the writer, would send a present. Then the letters were ornamented with drawings of hearts, cupids, and all such designs, and this ornamentation increased to gilt and other papers cut in very handsome manner. When this was the work of the young lady who sent it, it was all very pretty and proper, but after a while valentine making became a trade, the pretty verses, and the flowers and cupids were printed, and the handsome ornaments were cut by machinery, to such a length was this carried, that some of the valentines cost $20 or more, and did not show the taste and skill so much as the length of the purse of the sender. At length young men as well as girls sent valentines, and at last very coarse things were made and sold for valentines, with which a low-minded person could convey an insult to another without being known. So, like many another innocent and pleasing thing, the sending of valentines was put to wrong uses, and many good persons thought it would be better to give up the custom, and now comparatively few valentines are sent. It is one of those very old customs that we would not like to see die out, any more than we would that of the visits of St. Nicholas, or Santa Claus as we call him, and if treated in a proper and innocent spirit, is capable of affording a great deal of amusement, and giving pleasure to others. But no right minded boy or girl will ever take advantage of the day, to make sport of the infirmities or in any way wound the feelings of others. Rather than this should be done to one sensitive person, the day had better be as dead as the "saint" whose name it keeps alive. Before ending this valentine talk, already too long, we must tell you of one of the superstitions of the time when they had the valentine drawing in Rome. They thought that on the 14th of February, the birds all met to choose their mates, and it was thought nothing strange if those who were brought together by the lottery, should continue to be valentines through life. The Puritan-fathers had a very different view of the day, for they regarded it as the middle of the long New England winter, and had the couplet,

February fourteenth day,
Half your corn and half your hay.

Not much poetry, nor valentining about that, is there?

VALENTINE'S MORNING—THE POSTMAN'S VISIT.—*Drawn and Engraved for the American Agriculturist.*

WHAT NELLY SAW ON CHRISTMAS MORNING.

Nelly's Christmas Morning.—Of course, Nelly having been a good girl, was not forgotten by Santa Claus; she called him Santa Claus, but of course she knew all the while, it was mother who provided the presents for her and her larger brother, Tom. Nelly had candies, a new comforter, a book, and, of all the things she had wished for, a doll. Tom had several things, but there were the skates, and he did not at first notice anything else, as he was quite as much taken up with his skates, as Nelly was with her doll. At last he saw a little square box, and called to Nelly to see it; he opened the box, and—well, the picture tells the rest of the story.

The Winter Birds.

How dull winter would be, at least to those of us who live in the country, if it were not for the winter birds. All the gayer birds leave us when cold weather comes on, and take wing for a warmer country, but the snow-birds, the tit-mice, or chickadees, the winter wood-pecker, and some others stay in the Northern States all winter. However they may behave the rest of the year, when we see little of them, they keep on quite friendly terms during the cold weather, and often there will be two or three different kinds of these winter birds hopping about. Then how tame they get! They come around the house, and even to the very door-step, in search of crumbs and other food. Right under our chamber-window is the roof of a verandah or porch, and by throwing seeds and other food there, the birds make themselves quite at home, and come regularly for their rations. But that deep snow-storm, which came the Sunday before Christmas, covered up not only the food upon the roof, but all that they might find around the door or elsewhere. The poor little things could find no food, and were in great distress; the chickadees, which look as if they had on their winter-furs, and were quite comfortable, seemed to care less about it than the snow-birds, who perched upon the tree close by, and plainly showed that they were hungry. When the window was opened to give them food, the foolish things were frightened, and flew away. A friend told us of a little contrivance, which we shall try: he takes a long, slender pole with a string, much like a fishing-rod and line, and at the end of the string ties a piece of coarse meat; all the insect-eating birds like meat, and he says it is great fun to see the birds fly about, and peck at the meat so hung up for them. Arranged in this way, the meat will not be covered with snow, and for those birds who prefer other food, a little box of bread-crumbs, cracked grain, or seeds, could be put in place of the meat. It is so pleasant to see the birds about the house that it is worth while to take a little trouble to make them come.

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Reserve for Re-Insurance, - - -	1,951,239 78
Reserve for Unpaid Losses and Dividends, - - - - - - - -	290,924 42
Net Surplus, - - - - - - - - - -	885,281 03
TOTAL ASSETS, - - - - -	$5,627,445 23

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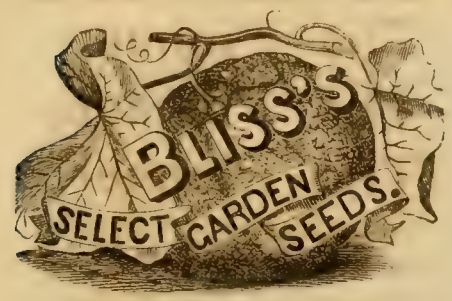

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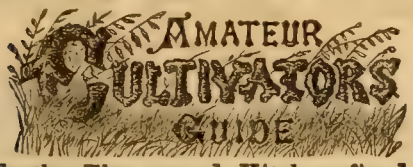

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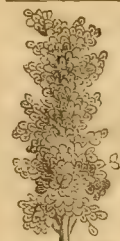

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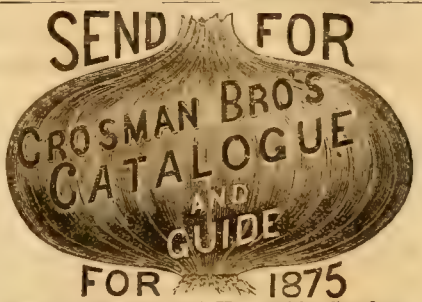

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A CHESTNUT CIRCULAR FREE.
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AN EXPERIENCE of nearly THIRTY Years in the Flower and Vegetable Seed business has convinced us that there are but **TWO KINDS OF SEED** in the world, viz: those that will, and those that will **not**, grow. The former are priceless—the latter worthless. The sale or utterance of worthless Seed, through cupidity or lack of business standing, raises sad havoc with the business of legitimate Seedsmen. For nearly thirty years past we have made the growth and procurement of **NONE BUT GOOD SEED** a study, until we are proud to say, foreign or native seed growers from whom we procure such of our supplies as we do not raise upon our own farms, never think of offering us any but **First-Class Seeds.** To this one point we attribute our success, and the universal verdict of the Press and People is that **Seeds procured of BRIGGS & BROTHER WILL GROW.**

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New and Rare Fruit and Ornamental Trees.
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Large Red Wethersfield	per lb.,	$4.00
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They will retain pencil-marks legibly, and last longer than other woods.

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Ask your Seedsman for them.

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Seedsmen and Florists, DETROIT, Mich.

The Patent Department of the American Agriculturist,

has been discontinued. **Mr. G. M. PLYMPTON, 245 Broadway,** (Agriculturist Building,) has had charge of this department, **and will continue to obtain patents.** He has had many years' experience in all business connected with obtaining **U. S. and Foreign Patents,** and in prosecuting **rejected applications** at the Patent Office, besides prosecuting and defending **Suits for Infringement** befor the **U. S. Courts.**

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(See *American Agriculturist,* Jan., 1875, for full description of the above.)

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Now, reader, here is something for You. Look over this attractive List of Premiums. There are many things among these that you would like to possess without having to pay the money for them. You have only to make your choice, and then take hold of this pleasant work of getting clubs of subscribers sufficient to obtain them. More than **Fifteen Thousand** Men, Women, and Children, in almost all stations and pursuits, have successfully done this, and at least fifteen thousand may do it **now.** You may as well be one of the fortunate ones, as anybody else. It only needs a little enterprise and the will—with the *will* there will be a *way*.

The *American Agriculturist* is one of the best papers to canvass for in the world. Its many beautiful illustrations, its interesting and instructive reading matter, its Household and Boys and Girls' Departments, its intrinsic value in every way, secure hosts of friends wherever it is seen and known.

Everybody ought to have the paper; its plain, practical information will put money in most people's pockets, and save multitudes from swindlers, and from unprofitable investments of funds and time. So while you are aiding to push the paper into the people's hands, you are engaged in "*doing Good as well as in Making Money.*" **TRY IT.**

Explanatory Notes.

N. B.

Read and carefully Note the following Items: (*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. You can have any time you wish up to next July, to complete your list....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion, at least, should be new names; it is partly to get these that we offer premiums to canvassers....(*f*) Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, but they should be used carefully and economically, and where they will *tell*....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at our risk; otherwise it is not.

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[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.50 a year, and also at the club rates of $1 a year. **Ten cents extra** must be sent with each subscription for prepayment of postage.]

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14—Gold Pen, Handle gold-tipped (do. do.)		$6 00	15	45
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25—Pocket Tool Holder (Miller's Falls Co.)		$1 00	3	....
26—Bracket Saw (do. do.)		$1 25	4	....
27—"Peoples' Pump" (W. S. Blunt).....		$12 00	19	65
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29—Excelsior Pocket Microscope (Vulcanite Optical Instrument Co.)...		$2 75	7	27
30—Two "Pocket Soap-Bubble Toy" (Bliss)		$1 00	3	....
31—Turn-table Apple Parer (D. H. Goodell)		$1 00	3	....
32—Climax Apple Corer & Slicer (do.)		$1 00	3	....
33—Family Cherry Stoner (do.)		$1 00	3	....
34—Knives and Forks (Patterson Bros.) ..		$15 25	22	75
35—Knives and Forks (do. do.) ...		$19 00	28	97
36—Carver and Fork (do. do.) ...		$4 00	10	34
37—French Cook's Knife, Fork, and Steel		$4 00	10	34
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39—Pocket Knife (do. do.) ..		$2 00	6	22
40—Pocket Knife (do. do.) ..		$2 75	7	27
41—Ladies' Pocket Knife (do. do.) ..		$2 00	6	22
42—Multum in Parvo Knife (do. do.) ..		$3 50	8	30
43—Garden Seeds & Flower Bulbs (select'n)		$2 00	6	22
44—Automatic Family Knitting Machine (N. Y. Knitting Machine Co.)....		$35 00	50	162
45—Sewing Machine (Secor)...............		$62 00	70	270
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47—Washing Machine (Doty's)............		$14 00	21	70
48—Clothes Wringer (Best—Universal)		$7 00	15	47
49—Melodeon, 4-oct'e (G. A. Prince & Co.'s)		$90 00	105	320
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51—Silver Watch (American Watch Co.)..		$40 00	50	165
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56—Hand Cultivator & Weeder (Comstock)		$9 25	17	54
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79—A $15 Library do.		$15 00	24	85
80—A $20 Library do.		$20 00	31	106
81—A $25 Library do.		$25 00	38	125
82—A $30 Library do.		$30 00	44	144
83—A $35 Library do.		$35 00	50	162
84—A $40 Library do.		$40 00	56	177
85—A $45 Library do.		$45 00	62	192
86—A $50 Library do.		$50 00	68	207
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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 47.

How a Student Became a Gardener.—One of our associates out West on a business tour, writes home the following: Not many years ago a young man studying law in Michigan, fell into ill-health. Having come across Henderson's "Gardening for Profit," he became greatly interested in the subject. Previous to that time he knew so little about plants, that he could hardly tell the difference between a turnip and a carrot. Determined to improve his health by out-door labor, he procured and studied back volumes of the *American Agriculturist*, and commenced work on a dozen town lots, then owned by him. From the start success rewarded his efforts. He soon removed West beyond the lakes, where he grows vegetable and flower seeds on a large scale. To-day he is a picture of ruddy health, and though no more than 40 years of age, he ranks among the foremost seedsmen of that region. A famous dealer at the East has sought him out, and made large purchases of him the past season, among the rest, paying $60 gold for 6 ounces, a handful, of choice seed of his raising.

Going West.—D. B. Miller, "McMitchels." (Where?) It is impossible to reply by mail to a query dated as above, with neither County or State. Many such letters come to us, the writers of which probably feel inclined to accuse us of neglect, because they receive no reply, when the fault is their own, as in this case. Of the two localities mentioned in your letter, we should choose that around Hutchinson, in Reno Co., Kansas, on account of the abundance of water; the Arkansas river and Cow Creek flowing through the County, and also because there is no liquor saloon licensed in Reno county, which tends greatly to elevate the character of society in that neighborhood.

The Estimates of the Cotton Crop.—"B. B.," Ediston, S. C. That the estimates of the cotton crop, made by the Agricultural Department of Washington, have for several late years, excepting in 1871, fallen nearly 15 per cent below the actual crop, is probably due to the fact that the detailed estimates are originally made by planters or other correspondents of the Department, whose interests cause them to lean toward low estimates rather than high ones.

Foreign Trade in Butter.—A package of butter was recently received in New York, from Bolivia, in South America, which was originally shipped eighteen months ago, from Denmark to London, and thence to South America. It was packed in a tin case, and after its long voyages, when opened was in excellent condition, and the case perfectly free from rust. This foreign trade is now ready to be secured by our dairymen, if they will only have the enterprise to pack their butter in the manner desired by the South American consumers.

Wisconsin State Ag'l. Convention.—Had the "powers" sent us notice a few days earlier, we should have been glad to call attention to this Gathering, called for Jan. 27th to 29th. We cheerfully publish such notices, but they must always be on hand before the middle of the month preceding that in which they are held. This one presented a programme of most attractive subjects, treated by capable men.

American Vines for France.—Since the destruction of the French vineyards by *phylloxera*, the vineyardists there are giving much attention to American vines. One of the great grape firm of Bush & Son & Meissner, Bushberg, Mo., in a private note to the Editor, states that their French trade is becoming important; they have already made several shipments, and will forward a car-load of plants and cuttings this month.

Where the Drugs come from.—The book that tells us all this, not by one old story patched on to another, and copied over and over, but by authority, and with originality and freshness, is the *Pharmacographia, a History of the principal Drugs of Vegetable Origin*, by Dr. Flückiger, a Professor in the new University of Strassburg, and Mr. Daniel Hanbury, of London, one of a family of fame in the druggist line, and who has made drugs for a long while a scientific study. The volume is an 8vo. of 700 pages, and is published by MacMillan & Co., of Astor Place, New York, and of London. It is not a medical botany; it is the

drug that is described rather than the plant that yields it; but the right name of the plant is given, and sufficient references to fuller botanical information. Nor is it a Materia Medica in the modern sense, for the medicinal uses and applications, and the diseases they are thought to cure, are only slightly mentioned. Of course it gives none of the details of a pharmacopœia or dispensatory. But its pages are filled with authentic and reliable matter relating to the Botanical Origin, History, Formation, mode of collection, Characters and Properties, Chemical Composition, and Commercial Statistics of all the principal vegetable substances employed in medicine, or otherwise known as drugs.—Of *Sassafras*, under the head of "Production and Commerce," it is said: "Baltimore is the chief mart of sassafras root, bark, and oil, which are brought thither from within a circuit of 300 miles. The roots are extracted from the ground by the help of levers, partly barked, and partly sent untouched to the market, or are cut into chips for distillation on the spot. Of the bark as much as 100,000 pounds were received in Baltimore in 1866. The quantity of oil annually produced previous to the war is estimated at 15,000 to 20,000 lbs. There are isolated small distillers in Pennsylvania and West New Jersey, who are allowed by the owners of a 'sassafras wilderness' to remove from the ground the roots and stumps without charge."

John Ellis not an American Botanist.—The American Garden, reproducing the Gardeners' Chronicle's striking but rather fanciful page-full of figures of Insectivorous Plants, recapitulates the leading points in regard to their action, and the history of what is known about them, including the recent contribution by Mrs. Treat of New Jersey. Ellis, with whom the literature of the subject begins (about 1770), is said to be "an American botanist and collector." Now John Ellis was a London merchant, born within the sound of Bow-bells, probably was never in America, and, although a naturalist, can hardly be ranked as a botanist. Indeed, he was mainly famous in taking the corals out of the hands of the botanists, by showing that they belonged to the animal kingdom. He even took more than belonged to him; for some of his *Corallines* are calcareous sea-weeds and have been reclaimed by the botanists.

"Cleanliness is next to Godliness," the Gardeners' Chronicle (of Dec. 5) tells us is "a New Testament statement." It is "as true as Gospel," no doubt; and it may rank with another doctrinal statement, of which a good woman, on being told it was not in the Bible, naively remarked, that she "always thought it was a great omission."

Seymour's Broadcast Sower.—"L. A. H.," Charlottesville, Va. The Seymour broadcast sower can be procured of R. H. Allen & Co., 189 Water St., N. Y. A number have used this machine for sowing grass, clover, fine fertilizers, plaster, and all the small grains broadcast with great satisfaction. On rough rooty or stony land, it may be used where a drill can not.

Effect of Pumpkin Seed.—"E. M. S.," Warner Co., O. Pumpkin and squash seeds are said to have a diuretic effect, and this necessarily affects injuriously the secretion of milk. Therefore, when pumpkins are fed to cows, it is safe, at least, to remove the seeds.

Mechanical Draftsmen.—"J. P. B.," Allentown, Pa. The best place to learn mechanical drawing, is in a mechanic's shop or in a mechanical engineer's office. It can not be learned from books, any more than the art of photography or of oil painting.

What our Hotel Bills pay for.—A Reporter of the Tribune has recently been looking into the items of consumption at the N. Y. City Hotels, and makes some striking estimates. He selects 15 out of the 108 principal hotels, and in the 15 finds 4,662 rooms, which will accommodate 6,030 persons, and that in an emergency, these hotels can put up beds for 7,640 persons; that in the course of a year these 15 hotels are visited by nearly a million and a half transient persons, or 1½ times as many as the entire resident population of the city; that these persons expend at least $10 each, or $15,000,000 here, aside from mercantile purchases; that these hotels keep 1,456 female servants, and 1,479 male servants—total 2,935. Further, that these 15 hotels consume annually, 2,839,200 lbs. of Fresh Meat; 481,520 lbs. of Salt Meat; 590,200 lbs of Fish; 15,000,000 Oysters; 4,704,960 Eggs; 1,274,000 lbs. of Poultry; 275,080 head of Game; 35,620 lbs. of Tea; 145,340 lbs. of Coffee; 686,920 lbs. of Sugar; 461,500 lbs. of Butter; 1,421,160 quarts of Milk; 168,480 quarts of Cream; 91,000 lbs. of dried Fruit; 61,880 gallons of canned Fruits, Jellies, etc.; 1,268,800 lbs. of Soap; 60,000,000 cubic feet of Gas; 22,461 tons of Coal. The pieces of linen washed are estimated at 19,022,000, and the pounds of garbage at 11,000,000. These hotels range in number of rooms thus: Grand Central 630, Fifth Avenue 550, St. Nicholas 500, Windsor 500, Metropolitan 400, Grand Union 350, Stuyvesant 300, New-York 300, Gilsey 267, Hoffman 250, Union Square 142, Brevoort 138, Winchester 120, Ashland 108, Albemarle 107.

What is a Day's Work.—"T. A. P.," Ontario Co., N. Y. We can not say how many hours work constitutes a legal day's work upon a farm. A customary day's work is from breakfast to sundown, but a farm laborer who would object to work extra hours upon emergencies, would not be generally considered as a desirable farm hand. Those who are hired to drive horses, are expected to feed and care for the team mornings and evenings. A month's work is held to include every working day in the month, excluding only Sundays. Legal holidays are generally counted as lost time, but in the case of men hired permanently, employers rarely deduct holidays as lost time. A man hired upon a farm has no right to refuse to do any reasonable labor required of him; ditching or making drains is reasonable labor, which he should not refuse to perform. To refuse to do such work would be sufficient cause for a laborer's discharge without notice.

Hand-Power for Sawing Wood.—"E. M. S.," Warner Co., O. There is nothing gained by substituting the ordinary "buck-saw" for a hand or foot-power in sawing wood. But a very simple sawing-machine may be constructed to saw wood by a one or two-horse-power, or a wind-mill.

Stump Puller.—"T. E. D.," Janesville, Wis. If the advertising columns of the *Agriculturist* were read before an enquiry for any implement is sent, a good deal of trouble might be spared. In this case you would have learned that a stump puller is made by Chamberlain & Sons, of Olean, N. Y., which will no doubt answer your purpose.

Weight of Milk.—"Subscriber," St. Cloud, Minn. Poor milk is heavier than water or rich milk. The specific gravity of milk, is from 1,029 to 1,033, the richer the milk, the lower the gravity. This means that the same quantity or bulk of water, which would weigh 1,000, if of milk would weigh 1,029 to 1,033. This is much more readily understood when the decimal or metric weights are used. Thus, the French litre, the unit of measure, weighs exactly 1,000 grammes when filled with pure water. But the litre of milk weighs according to its richer or poorer quality, 1,029 to 1,033 grammes. As cream is lighter than milk, the more cream there is in the milk, the lighter it is, and vice versa. It is this fact which makes the use of the specific gravity lactometer a very uncertain test of the quality of milk. The proper test is to set the milk in a tube graduated to a hundred parts, and note the percentage of cream.

As to Bargains and Sales.—"T. J. P.," Naples, N. Y. When a sale of stock or produce is made, it is not legally binding upon either party, unless the whole or a portion of the purchase money is paid, or a portion or the whole of the goods is delivered. There must be either payment or delivery, or a written contract to make the bargain binding. If stock or goods are sold, and a deposit is made, and a time fixed for delivery, the seller is not obliged to wait longer than the specified time, and may sell to other parties after that time. A seller is not obliged to deliver goods sold, without payment, unless he has made a written contract, or has taken a note in payment, and not then if he has good reason to fear that he may not be paid for his goods. If farmers could and would buy and sell for cash, it would greatly simplify their business and prevent many disputes.

"Is the Fruit changed by Foreign Pollen?"—"E. Y. T.," a competent observer at Richmond, Ind., gives the following interesting testimony: I once saw a hard shelled almond growing beside a peach-tree, both laden with ripening fruit, and the fruit of both was changed from the ordinary appearance and quality, especially was this change most marked in the sides of the trees adjacent. The almond is almost exactly like the peach in tree, leaf, flower, fruit, and seed; differing mainly in that the flesh of the almond fruit is unfit to eat; when ripe the flesh cracks open, and allows the nut, which is the only edible part, to drop out. In the case under consideration, the fruit of the peach tree, especially on the side next the almond, cracked open like the almond, and the quality of the fruit changed from a very good peach into a bitter one, with one side cracked open like an almond, exposing the stone, while on the almond-tree adjoining the peach, the fruit was not so much cracked open as usual, and the size and texture of the fleshy covering of the nut, was more or less changed. Other peach trees growing near, were not mixed with almonds, and the owner of the orchard said that only this one peach tree bloomed at the same time as the almond. A friend of mine, a very careful observer, says he *knows* from many years' observation, that if two varieties of Irish potatoes are planted adjoining, *if they bloom profusely at the same time*, many of the potatoes produced, will be well marked crosses, showing that the change produced in the seed-ball, through the action of the pollen, is also transmitted through the stems to the tubers.—[Will the gentleman here referred to kindly inform us which varieties were the subjects of his observation.—ED.]

Catarrh in Fowls.—"C. W. R.," East Taunton, Mass. Catarrh or roup in fowls, is best treated by injecting a solution of carbonate of potash into the nostrils, and afterwards a solution of chloride of zinc. The potash solution is made with ½ oz. carbonate of potash (saleratus) in a pint of water; the zinc solution of four grains of the chloride in an ounce of water.

Planting Hill-sides.—"L. A. W.," Pike Co., Pa. In the neighborhood of tanneries, where rough mountain land is to be purchased "for a song," after it has been cleared of timber for the bark, it would certainly pay to plant it with rock-chestnut oak acorns. The bark of this is worth more than that of white oak, and it will not be many years before tanners will be glad to buy the bark and twigs from small wood. These are richer in tannin than the bark of older trees, and an estimate of a yearly value of two dollars per acre for land planted in such a manner, would probably be a reasonable one. If the land can be purchased and planted for $20 an acre, the return would be ten per cent per annum.

Extensive Chicken Raising.—"A Subscriber." It would undoubtedly pay for any person "to raise 2,500 or 3,000 chickens for spring markets," but it is very questionable if any novice can do this. An experienced poultry raiser might probably succeed in keeping 1,200 hens upon 25 acres, and raising many chickens, but it would be only by the utmost care and attention, and such treatment as is learned by experience, and exercised with the greatest skill and tact. We advise no one to go into a large poultry business without these qualifications.

For a Kicking Horse.—"W. W.," Huntingdon, L. I. A horse that has acquired the habit of kicking in his stall, will not usually exercise the habit if kept in a roomy, loose box, or if he does he is nearly always so far from the sides of the box that he can not reach them with his heels.

Angora Fleeces.—"R. J. C.," Lancaster, Pa. Messrs. Coates & Bro., of Philadelphia, will doubtless be able to find a market for Angora fleeces in that city, where we believe the only factories using this material are situated. It is not correct to say Cashmere *or* Angora. These two localities are distant from each other, and the Cashmere goat is distinct from the Angora goat. The Angora goat does not bear the fine downy under-fleece which is so valuable for the manufacture of the Cashmere shawls.

Virginia Hams.—"W. S.," Christiansburg, Va. The method of preparing the famous Virginia hams is as follows. The pork is to be well fattened, and after slaughtering hangs over night to cool. The hams are then smoothly cut and rounded, and the leg taken off below the hock. For each 100 pounds of hams, a pickle is made of 10 lbs. of salt, 2 lbs. of brown sugar, 2 ounces of saltpeter, and 1 ounce of Cayenne pepper, with 4 gallons of water, or sufficient to make brine that will float an egg. The shoulders and middles are generally pickled with the hams; all being neatly trimmed, they are packed closely in a cask, and the above pickle poured over them, to cover all completely. After five or six weeks the hams are taken out and drained, and hung up by the skin of the hock in the smoke-house, in which a very little fire is made, so as to have cool smoke. The smoke is made with corn-cobs or hickory chips. Here they remain, being smoked for a few hours twice a week, until fly-time is near. Before there is danger of flies, each ham is wrapped in clean paper, and put into a tight bag of coarse cotton, leg downward. The mouth of the bag is tied with strong twine, the end of which is made into a loop, and the hams are hung up until wanted. It would be an improvement upon this plan, if the bags were coated with thick lime-wash.

Water Pipes.—"J. L. D.," Martin's Station, Va. A pipe of one inch diameter, will discharge about one quart of water per second, or 900 gallons per hour. If 1,500 feet of pipe is laid from a spring to a house 30 feet lower than the spring, across uneven

ground, no air will collect in the upper bends, unless they are above the level of the spring. In that case the pipe becomes a syphon, and will be liable to all the difficulties usual with syphons. It would be best to lower the elevations, or lay the pipe around them, so as to have no part of the pipe above the level of the spring.

International Grain Exchange.—An international seed and grain market has been established in Hungary, at the city of Buda-Pesth. The plains of Hungary are in the European markets the great grain-producing competitors of our Western prairies, and this effort to attract purchasers proves that the competition to sell grain is becoming active and close. The greatly increased use of agricultural machinery in Europe is already telling in the increased production of wheat, and there are as great efforts making there to reduce the cost of freight to market, as in the United States. It is a serious question for us to consider, how long the foreign demand for our grain should fix its price in our barns, and how long the profits of American farmers can safely depend upon the accidents, which affect foreign crops and foreign demand for our produce. Although wheat and corn are necessaries of life, yet an over-production of them is as unprofitable to a farmer, as an excess of any other article.

Amount of Potash in Wood Ashes.—"C. V. W." Wood ashes contain from 10 to 20 per cent of potash. The quantity varies not only with the species of wood, but also with the manner of burning. Wood, when slowly burned, produces richer ashes than when it is burned rapidly. At least such is the experience of potash burners. According to analyses of ashes of various woods given in Prof. Johnson's "How Crops Grow," the ash of oak contains 10 per cent of potash; of willow and birch 11 per cent; beech, poplar, and white pine 15 per cent; elm 21 per cent, and linden, (basswood), 35 per cent.

Foreign and Domestic Salt.—"A. L. B.," Chautauqua Co., N. Y. As to the safety of using American salt, the Onondaga, N. Y., factory filled salt is without any doubt perfectly safe to use in butter, and it is freer from objectionable impurities, than any other salt in the market. The Ashton salt has 1.43 per cent of sulphate of lime, while the Onondaga "factory filled," has but 0.91 per cent. It is the presence of lime which is most objectionable, and the Ashton salt has about one-half more of this than the Onondaga. Experience is strongly in favor of the American salt. A pail of butter put up by Mr. L. C. Flowers, of Onondaga Co, N. Y., two years and four months ago, was opened recently, and was as sweet and solid as could be desired. There can be no better test than this.

Sowing Machines.—"P. D. H.," Gansvoort, N. H. There is a broadcast sowing machine, which distributes both seed and dry, fine fertilizers very evenly, made by Seymour & Co., Bloomfield, N. Y. We have used it for sowing plaster, guano, superphosphate, ashes, etc., and with one horse and a driver 10 acres a day may be sown. Any one of the standard grain drills is as good as another upon either sandy or clay soils. The kind of soil makes no difference; if a heavy clay is properly plowed and fitted for the crop, it is as easily sown as a sandy loam.

Wagon-Jack.—"E. D. S.," Wayne Co., N. Y. Your drawing of a wagon-jack is received. It has already been illustrated in the *Agriculturist*.

Peanut Straw.—"C. W. R.," Hickman, Tenn, writes that peanut straw is a very valuable fodder if saved with care. When the crop is harvested, it should be stacked in tall narrow stooks until the nuts are dry, when they are picked off or thrashed, and the straw is housed or safely stacked. About 1,200 pounds per acre is the usual yield. It is greatly productive of milk, and will keep stock in good condition without grain.

Grass and Clover in the South.—"D. O. H.," Jackson Co., Miss. That clover and some of the grasses will succeed in the South, has been proved in several places so widely apart, that the possibility may be considered general. In your own State clover that had been pastured through last winter, was 18 inches high and in blossom in May last. A field of clover in another part of the State, was this year in its fourth year, and still in good and thrifty condition. Timothy is not a success in the South except in the mountains, where we have seen a heavier growth than anywhere else. Orchard grass, red top, and blue grass, grow and thrive in Mississippi, Georgia, Alabama, and South Carolina, where properly sown and cared for, but especial care is needed to resist the dry, hot season, and the temptation to over pasture the grass in the winter. It is useless to try to raise grass upon barren worn out soil where a long dry season has to be contended with.

To Destroy Briars.—"J. R. C.," Athelstone, P. Q. To destroy briars by means of sheep, the pasture must be largely overstocked. A hundred-acre field is too large for such a mode of improvement. Besides, if the briars grow strong, they seriously injure the fleeces of the sheep. We would suggest that the briars be mowed, and the spots where they grow be salted. The sheep will then eat the young sprouts closely, and will stay upon those parts that are salted. But there must be enough sheep to keep the sprouts eaten close. We have succeeded in this way in killing out a quantity of dewberries, upon a field which we did not want to plow; the sheep being fed a small quantity of bran and oats daily, to make up for the poverty of the pasture.

Ram for Early Lambs.—"R.," Pittsgrove. A Cotswold ram, crossed upon native sheep, having some merino blood in them, or upon grade or full-blood merinos, produces the best early market lambs for the farmer's profit. A pure Southdown lamb would doubtless be better eating, but while the highest prices are paid for size and fat, the Cotswold ram would be preferable to a Southdown. We have known a difference of 15 pounds between the weights of Cotswold and Southdown grade lambs of the same age (three months) and keeping, and this will frequently make a difference of $1.50 in the price of the lambs.

Feeding in Confinement, etc.—"W. F. B.," Packerton, Pa. Any animal will fatten, or make flesh faster, when fed upon an equal weight of roots washed and sliced, than when fed upon roots as they are taken from the ground. This is clearly evident, because the weight of earth adhering to the roots newly harvested, is considerable, and there is no nutriment in earth. An animal will also fatten and make flesh faster, when confined in a space sufficient to allow it to move freely, than in a space in which it can make no movement. An animal in a cramped, uneasy position, can not be contented, and would probably lose weight, instead of gaining. Comfort and ease is necessary for a feeding animal. This is not only reasonable, but has been proved by experiment, in which animals, fed in roomy sheds, gained 2 lbs. for each 100 lbs. of turnips eaten, and others in close cribs gained only 1¾ lbs. on the same food. If the confinement was so close, as to affect the animal's health, the meat would suffer in quality.

Mill for Grinding Bones.—"W. R. S.," Sussex Co., N. J. We know of but one mill that will grind bones fine enough for a fertilizer, and that can be used without risk of breaking or wearing out. This is the Bogardus Eccentric Mill. A small mill, which costs $204, may be run with 3 horses, and will grind 10 tons of bone a day. The same mill may be used for grinding corn ears into coarse feed for stock. For grinding feed a two-horse power would be sufficient.

Care of Stock in the South.—"W. J. E.," Birmingham, Ala. The main trouble with cattle brought to the Southern States from the North, occurs in July and August when fresh succulent feed becomes scarce. The dry fodder eaten becomes packed in the paunch, where it remains undigested, a source of irritation and disease. This is the cause of what is known as "murrain," which is a blood disease produced by defective nutrition and irritation of the digestive organs. Cattle should be taken South while young, and in the winter season. The first year they should be sheltered from extreme heat, provided with pure water frequently, and with succulent green food, care being taken not to change the feed suddenly. Salt should be given at least once a week, and at the first appearance of costiveness, a dose of epsom salts should be given, or an injection of soap suds until the bowels are moved naturally.

Barley for Horses.—"J. C. G.," Fairfield, Me. Barley is a very safe and nutritious feed for horses. The cavalry horses in nearly every European country are fed with barley, and no other grain, and until recently when our corn has been largely used in England for horse feed, barley was there the staple grain for horse, as well as for poultry feed. There is less husk in barley, in proportion to the kernel, than in oats. There is no more danger in feeding barley than other grains, and less than in feeding corn. We believe this grain is too much neglected in our agriculture, but the excuse probably consists in the better cultivation needed for this crop, than for oats.

Keeping Sheep on Shares.—"A Reader." The usual arrangement made when sheep are taken on shares, is to divide the wool and the increase, which means that all the losses are borne by the person who takes care of the flock. He returns at the end of the time, an equal number to that which he received, and half the lambs which have been raised, with half the wool yearly. It is thus that the best efforts of the shepherd in caring for the sheep, are secured; else there is no safeguard against neglect and bad management.

Good Yield of Potatoes.—"C. H.," Escanaba, Mich., writes that he planted 3½ bushels of Early Rose potatoes, on June, 11th, and dug the produce in October, which was 111 bushels. (E. H. must try again. This yield has frequently been doubled in northern Michigan, and not far from Escanaba).

Varieties of Asparagus.—"B. F. M.," N. J. This matter has been discussed in former years, and we do not see how any one who has compared one year old plants of the "Colossal," with those of the common varieties of the same age, can doubt that there are differences sufficient to make one preferable to the other. It is held by some that the plant being diœcious, *i. e.*, with staminate and pistillate flowers on separate plants, it is impossible to establish a variety that will come true from seed. This same objection would apply to spinach, of which there are several varieties which come true to their character.

Sheep Raising in the West.—"A. O. B.," Derby, Vt. Probably the Arkansas Valley, in South-west Kansas, is one of the best places for sheep raising. It has the advantages of plentiful water, good pasture, dry soil, moderate winters, nearness to markets, and cheap land for a homestead, with good and extensive back range. It is also free from competition with the cattle men, which has been found troublesome in parts of Colorado, New Mexico, and Texas.

Poultry for Texas.—C. B. Prior, De Witt Co., Tex. The breed of fowls, which combines the qualities of hardiness, productiveness, and size, in the greatest degree, is probably the light Brahma. There would be little difficulty in making underground shelters for the fowls in the mid-day, or low sheds of sod, beneath which they could take shelter.

Mortality amongst Hogs.—We hear of serious losses amongst hogs in the Western States. Unfortunately there is little accurate knowledge amongst the owners as to the nature of the diseases, and none as to the remedies. Thus we are told by some that it is hog cholera, that it is caused by *trichinæ spiralis*, that it is worms, and others do not suggest any opinion. It is impossible for any private individual to make the necessary investigations into the causes or proper treatment of these diseases, which annually cost millions of dollars to our farmers. There is an Agricultural Department at Washington, but this serious matter is not considered there of sufficient importance to attract notice, or to be worthy of an expenditure of a few hundred dollars, for the purpose of gaining some knowledge of it. Why do not the Patrons take hold of this matter, and procure a thorough investigation of the causes and nature of these destructive diseases?

Lime for Canada Thistles.—"J. W. H.," Morris Co., N. J. There is an easier way of killing Canada thistles than to spread enough lime upon the ground to destroy them. That would require several thousand bushels to the acre. It is best to plow the ground lightly when the thistles are coming into blossom, and cultivate the ground very frequently. The next season potatoes or corn should be planted, and these crops grown alternately for three or four years, killing every thistle as it appears above ground, with the hoe.

Profit of Breeding Mules.—"W. W. S.," Tuscumbia, Ala. The profit of breeding mules is at least equal to that of rearing any other farm stock. There is little risk, and if a good jack and extra sized mares are used, large and valuable mules can be produced. The usual expense of raising a mule in Kentucky, is about $70, allowing cost up to weaning $50, and feed for 18 months, $20. The value of a two-year-old is $150, leaving a profit of $80. Southern planters are content to pay Kentucky and Illinois breeders to do this business for them, and expend several times the labor and care in raising cotton to pay for them.

Injury to a Plow.—"C. T. C.," Fort Dodge, Iowa. It will harm a plow but little to leave it in the furrow over night. It is the constant exposure for weeks and months when not in use, that destroys these and other farm implements. All these should be kept well painted, and ordinary use will be slight injury to them. When out of use they should be laid away in a dry tool-house. A well made plow ought to last at least 10 years in prairie soil without much repairs, if properly cared for.

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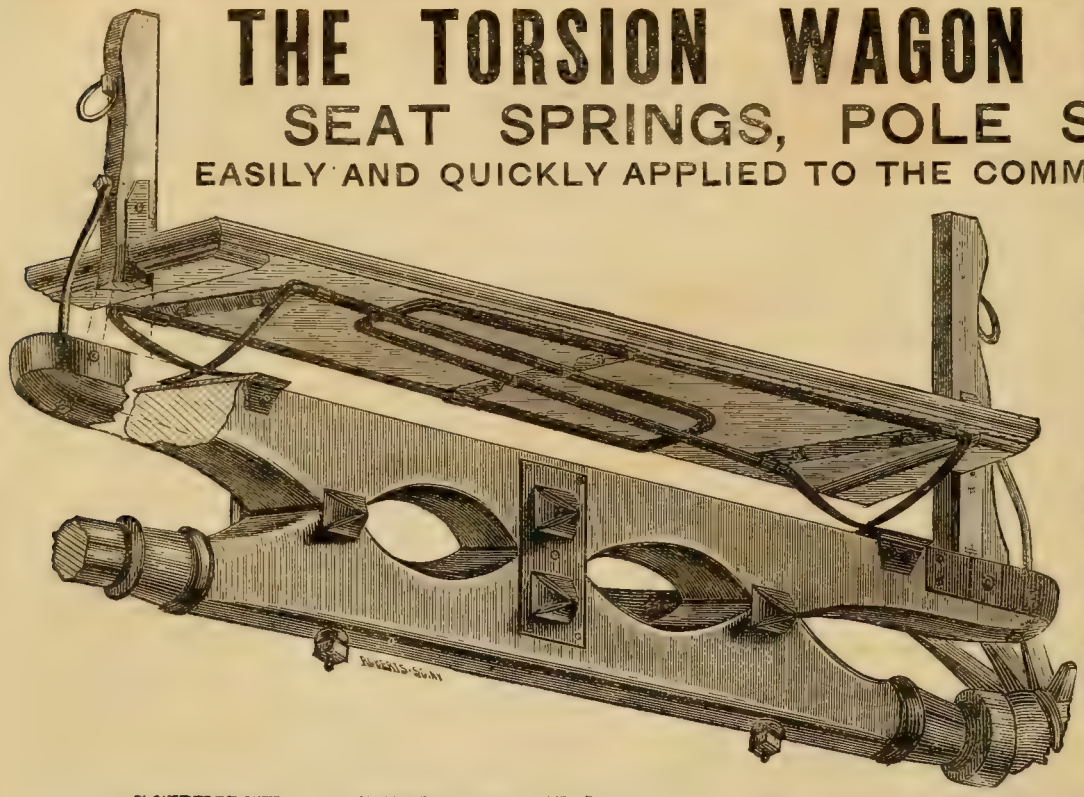

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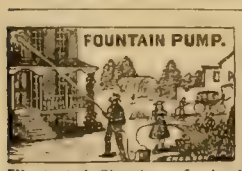

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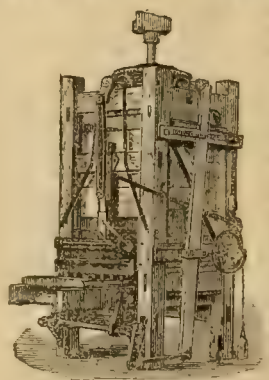

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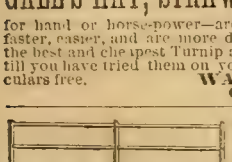

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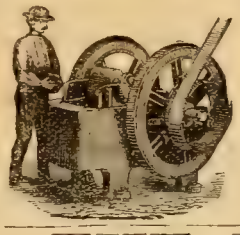

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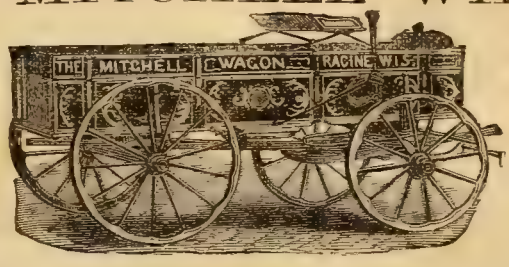

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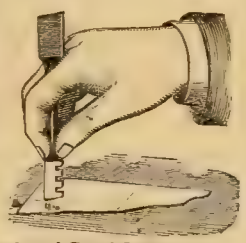

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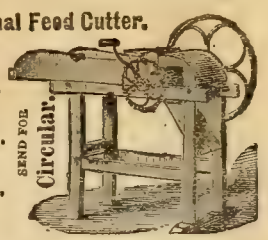

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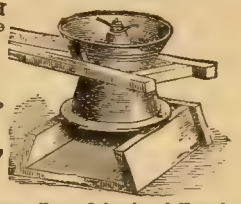

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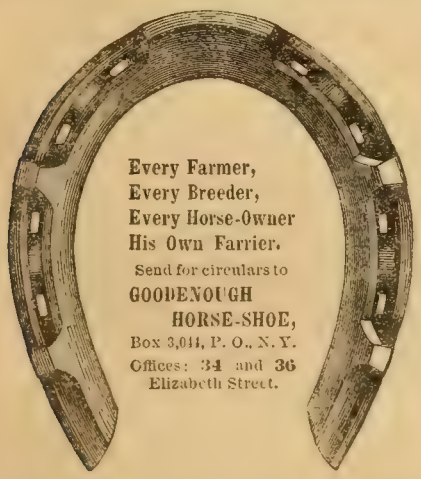

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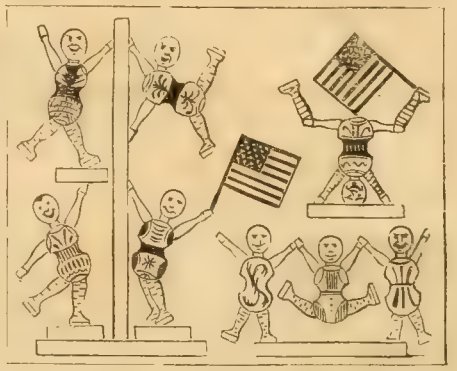

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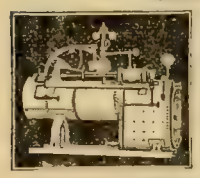

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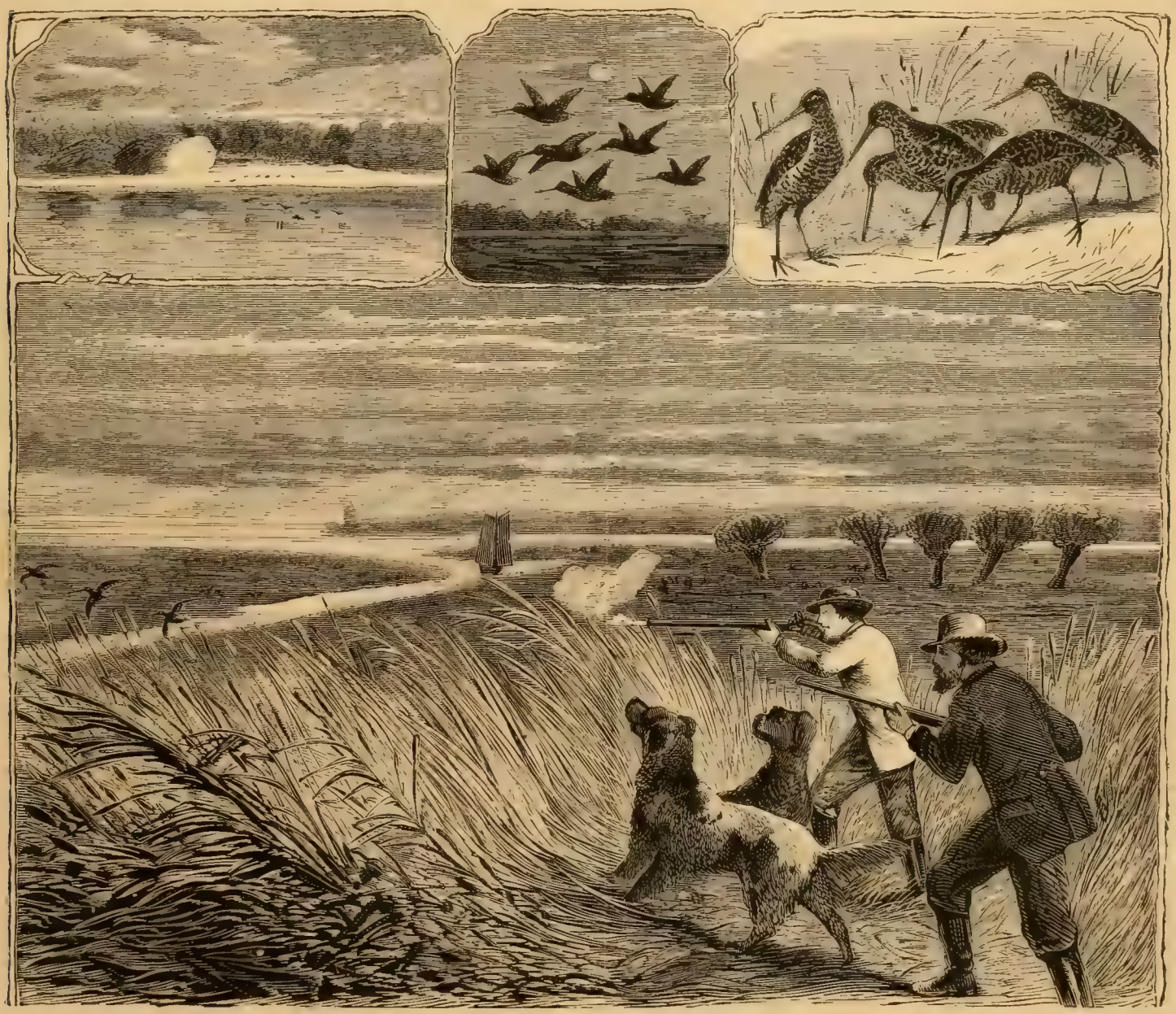

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Farmers and Sportsmen.—F. D. Curtis, of Charlton, Saratoga Co., N. Y., informs us that a valuable brood mare of his was found dead in his field, having been fatally shot by a so-called sportsman. The shooting of farm animals by trespassers, and the worrying of sheep by curs accompanying them, is far too common, and farmers are obliged, in self defence, to combine to prevent such trespass and its consequences. There should be no shooting over farms without permission from the owners, and protective legislation is very necessary to secure farmers from the annoyance and loss which occur every year. Although every citizen is permitted to "bear arms," he is not privileged to use them to his neighbor's injury or annoyance.

Hatching of Eggs.—"S. W. J.," St. Louis, Mo. It is impossible to say why eggs of "fancy" fowls should not hatch. There ought to be no good reason why they should not. The mere transportation should not affect them, as eggs have been shipped from the East Indies to England, and yet 25 per cent. of them produced chickens. The most probable cause is the close confinement of the fowls in yards. It is a well known fact in natural history, that many species of birds and quadrupeds will not breed in confinement.

Calendar for March.

Day of Month	Day of Week	Boston, N. England, N. York st'te, Michigan, Wisconsin, Iowa, and Oregon			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Mis'ouri, and California.		
		Sun rises.	Sun sets.	Moon rises.	Sun rises.	Sun sets.	Moon rises.	Sun rises.	Sun sets.	Moon rises.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	M	6 36	5 50	2 34	6 34	5 52	2 27	6 33	5 53	2 20
2	T	6 4	5 51	3 33	6 32	5 53	3 26	6 31	5 54	3 18
3	W	6 33	5 52	4 25	6 31	5 54	4 18	6 30	5 55	4 10
4	T	6 31	5 54	5 4	6 29	5 55	4 58	6 28	5 56	4 52
5	F	6 29	5 55	5 40	6 28	5 56	5 35	6 27	5 57	5 29
6	S	6 28	5 56	6 9	6 26	5 57	6 5	6 26	5 58	6 1
7	S	6 26	5 58	sets	6 25	5 59	sets	6 24	5 59	sets
8	M	6 25	5 59	7 22	6 24	6 0	7 22	6 23	6 0	7 22
9	T	6 23	6 0	8 27	6 22	6 1	8 26	6 21	6 1	8 24
10	W	6 21	6 1	9 46	6 20	6 2	9 43	6 19	6 2	9 40
11	T	6 19	6 2	11 3	6 18	6 3	10 58	6 18	6 3	10 54
12	F	6 17	6 3	morn	6 16	6 4	morn	6 16	6 4	morn
13	S	6 16	6 4	0 21	6 15	6 5	0 15	6 15	6 5	0 9
14	S	6 14	6 6	1 38	6 13	6 6	1 31	6 13	6 6	1 24
15	M	6 12	6 7	2 41	6 12	6 7	2 35	6 12	6 7	2 30
16	T	6 10	6 8	3 37	6 10	6 8	3 32	6 10	6 8	3 25
17	W	6 9	6 9	4 21	6 9	6 9	4 15	6 9	6 9	4 9
18	T	6 7	6 10	4 55	6 7	6 10	4 50	6 7	6 10	4 45
19	F	6 5	6 11	5 24	6 5	6 11	5 20	6 5	6 11	5 17
20	S	6 3	6 12	5 47	6 3	6 12	5 46	6 3	6 12	5 42
21	S	6 2	6 14	rises	6 2	6 13	rises	6 2	6 13	rises
22	M	6 0	6 15	7 4	6 1	6 14	7 3	6 1	6 14	7 2
23	T	5 59	6 16	8 6	6 0	6 15	8 4	6 0	6 15	8 2
24	W	5 57	6 17	9 11	5 58	6 16	9 8	5 58	6 16	9 4
25	T	5 55	6 19	10 13	5 56	6 17	10 8	5 56	6 17	10 3
26	F	5 53	6 20	11 17	5 54	6 18	11 11	5 55	6 18	11 5
27	S	5 52	6 21	morn	5 53	6 19	morn	5 54	6 19	morn
28	S	5 50	6 22	0 22	5 52	6 20	0 15	5 53	6 20	0 8
29	M	5 48	6 23	1 22	5 50	6 21	1 15	5 51	6 20	1 7
30	T	5 46	6 24	2 15	5 48	6 22	2 8	5 49	6 21	2 0
31	W	5 44	6 25	3 1	5 46	6 23	2 55	5 47	6 22	2 48

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	7	3 36 ev.	3 24 ev.	3 12 ev.	3 0 ev.	2 10 ev.
1st Quart	14	8 21 mo.	8 9 mo.	7 57 mo	7 45 mo.	7 15 mo.
Full M'n	21	7 8 ev.	6 56 ev.	6 44 ev.	6 32 ev.	6 2 ev.
3d Quart.	29	11 41 ev.	11 29 ev.	11 17 ev.	11 5 ev	10 35 ev,

AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1875.

Spring has come!—At least the Almanac says so. Many who read this page have already had their plows afield for some time, and are well along with the work, while to others, the announcement that "spring has come" will seem altogether premature; as they look out upon their snow-covered and frost-bound fields, they are quite sure that whatever the calendar may say about the seasons, what is practically spring to them is still some weeks in the future. This wide difference in the seasons gives us some idea of the wonderful extent of our country—in one direction at least; from Florida, where winter and spring are separated by an inappreciable boundary, to Canada, where the winters are long and summers short, what an immense variety of climate and diversity of products! Spring has opened long ago to our Southern friends, and as it advances northward, awakening vegetation and calling the farmer to new labors, it occupies fully two months in the transit. The differences between the extreme eastern and western portions of our territory, while they are marked in a different manner, are equally great. The *Agriculturist* finds readers among the orange groves of Florida, and the lumber camps of Michigan and Maine; it is taken in the manufacturing villages of New England, among the coal and iron mines of Pennsylvania, and on the rich prairie lands of what a little while ago was called "the west." In the plateaus of Colorado and New Mexico, among the vineyards and wheat lands of California, up the coast to Vancouver's Island, and down the coast to Mexico, are cultivators of the soil who turn to its pages for instruction and aid. Besides all these diverse conditions under which its readers live within our own territory, it goes to all other countries—Asia, Africa, Australia, and Japan. That a journal should be found acceptable and useful to cultivators so far apart, and working under such unlike conditions, is due to the fact that the principles of agriculture are everywhere the same; the requirements of plant and animal life are alike everywhere; and when it is known what are essential to the best development of plant or animal, any one intelligent enough to take a journal at all, will know how to secure these under the conditions of climate and other surroundings in which he is placed. So with the economies of farm life; it is as important to save a dollar in Texas as it is in Massachusetts, and whatever shows how the cost of production may be lessened, is of world-wide application. The statement "Spring has come" reminds us that we cater less and less for the wants of the few to whom the spring of the Almanac is the commencement of the season's work, but more and more for that great brotherhood, whether their possessions be broad or narrow, or whether they may live north, south, east, or west, who are tillers of the soil.

Hints about Work.

Take care of the Health.—As the snow and ice disappear, much rubbish that has collected during the winters, will be uncovered. Those who live in the country are too careless about matters affecting the health. Foul surface water frequently flows into the well. Cesspools and barn-yards overflow and saturate the ground, which gives off dangerous vapors under the influence of the sun's warmth. Fevers of various kinds and other diseases attack old and young. To clean until all danger is removed, should be the first work of spring. The cellar under the house must not be overlooked.

Keep the Feet Dry.—A farmer should be provided with waterproof boots and overcoat, in which to work about drains, ditches, and wet barn-yards. There are several kinds of rubber clothing, but that which is not subject to crack is the best. That made by Z. B. Heywood, 321 Broadway, New York, is of this character, and a farmer in any part of the country may procure these goods by express, by writing for them and remitting the cost.

Hired Men.—Every farmer must decide for himself if it is better for him to hire help and cultivate more land, or cultivate less land and do without help. But it is cheaper to pay for help than to let work get behindhand, or to leave necessary work undone. The best help is the cheapest. A married laborer is as a rule the steadiest. Besides, he need not be boarded in the house, to the serious inconvenience of the family, and the destruction of domestic privacy. Farmers who hire constant help, should provide a dwelling for the men, where they may be boarded by one of themselves. Farm laborers should be paid every week or every month; these short settlements prevent mistakes and disputes. Cash purchases more than credit.

Drains must be examined, lest they become choked and water remain upon the crops. Stagnant water is injurious not only to all vegetation, but to stubble land, but much benefit may be gained by turning the spring wash from roads on to meadows or pastures, and causing it to spread as much as possible.

Top-dressing meadows or fall grain, will be found useful. Spread the manure evenly upon the snow, if any remains, and go over it with a Thomas Harrow, or the brush harrow described in another place, as soon as the ground is dry enough.

Roads and Paths.—Surface water should not be allowed to remain upon roads or paths, or in ruts. Let it off, and fill up the holes or ruts with dry earth or gravel from a bank. A dry road will stand many times as much wear as one that is wet and muddy. Paths should be made dry, or planks laid down for walks over soft ground. When wet ground gets puddled, it takes a long time to dry.

Grass and Clover Seed may be sown upon the last snow with great ease and regularity. Each strip may be sown exactly, without missing or overlapping, as the seed can be readily seen upon the surface. The seed will not be injured, as it will not vegetate until the ground becomes warm.

Fodder Crops.—A good supply of green fodder never comes amiss. Cows at pasture will always eat a meal of fresh-cut green fodder, and it helps the milk pail. An acre or two of fall plowed ground should be liberally top-dressed with manure, and sown early with oats and peas, or barley and vetches. The ground must be made rich, 2½ bushels of oats or barley, and 1½ of peas or vetches, should be sown.

Early Pasturing is a mistake. The stock is made dissatisfied, and lose their appetite for dry food. Trampling is very injurious to the soft soil, which

does not recover from it for several years. The injury to the grass is serious. Wait until the ground is dry, and there is a full bite upon the pastures. Never pasture a meadow in the spring.

Plowing.—In plowing one may "make more haste" but get "less speed." No plow should be put into ground that is wet, or when the soil sticks to a bright steel mold-board. If water is seen in the furrow, plowing should be stopped, although the surface may seem dry. The nearer plowing and seeding can be brought together, the better will it be for the crop. It will be better to run two plows by and by, than begin a day too soon. There is plenty of work to do before one begins to plow.

Implements.—All farm implements, carts, and wagons, should be carefully overhauled. Look to the bolts and nuts especially. Use the Lock Nut bolt which can not get loose, upon all implements, machines, and vehicles. Clean and oil all bearings and gearings of machinery, with the best sperm oil. Common kerosene oil and a bunch of cotton rags is the best means for removing gum and dirt. A few drops of kerosene put on a rusty nut or screw, will often loosen it. A hot iron held for a few moments to a tight nut, will loosen it by expanding it. Castor oil is the best lubricator for wagons and carriages. Use crude petroleum in place of paint, upon all tools, plows, harrows, etc., and soak the wood with it until it will take up no more. It is cheap, and need not be spared. Oily rags will take fire spontaneously in warm weather, and should not be allowed to lie anywhere about.

Seeds.—If a full supply of seed has not been procured, no time should be lost. To lose a week or two at seed time, because seedsmen are crowded, or to go without scarce seeds because the stock is exhausted, is a loss of money. The best, freshest, and *cleanest* seed only should be used. This kind costs more, but is much cheaper than poor foul seed. A change of seed is desirable, especially of such grain as peas, oats, or wheat, which are attacked with weevil, or deteriorate in weight in our warm climate. These seeds should be procured from more northern localities.

Horses.—As the work season approaches, the feed should be gradually increased. Sudden changes are dangerous. Feed only coarsely ground or "chopped" grain. Corn ears ground, (corn and cob together), are not fit food for horses. The coarse indigestible pieces of cob will irritate the intestines. Only the most digestible food should be given. A quart of linseed cake meal in the feed twice a day, for a week or two, will be a useful laxative at this season, and will help the shedding of the coat. Don't spare the currycomb.

Cows.—In-coming cows need close attention. It is well to have a large stall in a separate building, in which each one may be kept loose until she has calved. This will prevent danger to both cow and calf, and trouble with the other cows, which are apt to be restless, and lose milk upon such occasions.

Calves.—The best heifer calves should be selected to replenish the dairy. Male calves should be castrated when a week old. There is never any trouble with them at this age. Calves to be raised, should be well fed from the first, and never allowed to go back. Treat them kindly.

Sheep and Lambs.—Provide separate pens for lambing ewes. Lambs should be docked when a few days old. Draw back the skin, and clip the tail with a pair of sheep shears. It is done in an instant, and the young animal feels but little pain. Lambs intended for wethers, should be castrated at the same time. At less than a week old we have simply clipped off the scrotum with the shears, without losing a single lamb. These operations are easier in every way if done early. Great watchfulness should be exercised over the flock at this season.

Sundry Matters.—As soon as the snow melts, take a careful look over the farm. One can not fail to find some things that need to be attended to. A supply of bran and flax seed should be kept on hand, so that there will be no time lost when they are needed in a hurry for a sick animal. Keep also a small quantity of ground Ginger, Sulphur, Epsom Salts, and Compound Tincture of Benzoin, in a safe but handy place. These are all the medicines a farmer needs to keep for his animals, if he is only careful to use precautions against sickness and accidents. Repair harness. Procure a stone boat for moving plows, harrows, and seed. Remove the old heavy shoes from the horse's feet, and replace them with low shoes without calks, or with the "Goodenough" shoes. Feed all animals well and liberally, and rid the stock of all vermin. Keep all the work well advanced, and then there will never be occasion to do anything in a hurry, and so lose time.

Work in the Horticultural Departments.

Hundreds would grow fruits who do not now if they only knew what kinds to plant and where to get them. Other hundreds knowing that it is no more labor to raise a good vegetable than a poor one, would gladly attempt improvement in this direction if they knew which among the hundreds of sorts named in the catalogues they could safely try. In the present notes we have endeavored to point out to the beginner the varieties of fruits and vegetables that are likely to be satisfactory. We have not selected the finest from the critical amateur's point of view, but good reliable sorts adapted to a wide extent of country. As to where to purchase, look in our advertising columns, and you will not go amiss. Send for a catalogue and order early.

Orchard and Nursery.

Planting.—Preparations for planting may be made this month, and in some latitudes the trees may be set out. The soil should have been prepared last year, but if it was not, no time should be lost. New soils rarely need manuring, but exhausted land must be renovated. It will be useless to set out young trees in a stiff, poor soil, and expect them to give a satisfactory return; it is true they may live and bear in time, but they can never make a healthy growth, or produce good fruit. See that there are no low spots in the orchard where ice and snow may collect and remain during the greater part of the winter; trees planted in such places do not ripen their wood properly, and are liable to be injured by early frosts, and the land cannot be cultivated until late in the spring.

Pruning may be done at any time before vegetation starts. When large limbs are removed take care not to allow them to fall before severing the bark on the under side of the cut, as they may peel the bark from the trunk, thus making a bad wound. Always pare the cuts smooth, a sharp knife, chisel, or drawing-knife may be used, cover with melted grafting wax, paint, or anything which will exclude the air and rain.

Varieties.—The best guide for a novice in fruit-growing is the experience of others in similar localities, and one about to set an orchard can make no better investment than the time and money it would require for him to visit the fruit growers within a circuit of 10 or 20 miles, and learn of the successes and failures of others. To aid the novice, we enumerate some of the standard varieties of each kind of fruit, remarking that they do not succeed equally well everywhere. We give here the leading market varieties of apples, and place those of other fruits under fruit-garden.

Apples—Varieties.—If one lives near a city or town large enough to afford a market, a good share of early apples may be profitable. For New York and other distant markets, only varieties that are well known should be grown, a local variety, no matter how good it may be, if not known to dealers, will meet with a slow sale. *Summer*, Early Harvest, Large Yellow Bough, Red Astrachan, Golden Sweet, Summer Queen, Williams. *Autumn*, Chenango Strawberry, Duchess of Oldenburgh, Fall Pippin, Fall Wine, Gravenstein, Jersey Sweet, Keswick Codlin, Maiden's Blush, Porter, Washington Strawberry. *Winter*, Am. Golden Russet, Baldwin, Ben Davis, Canada Reinette, Esopus Spitzenburgh, Fameuse, Jonathan, King of Tompkins County, Lady, Monmouth Pippin, Newtown Pippin, Northern Spy, Peck's Pleasant, Rambo, R. I. Greening, Roxbury Russet, Talman's Sweet, Twenty Ounce, Winesap, Yellow Bellflower. There are some 2,500 described varieties, and this list by no means includes all of the best, even for marketing, but it will serve to direct the inquiries of a beginner.

Fruit Garden.

Planting.—The general directions given under the orchard, apply to this department equally well.

Currants.—If cuttings were placed in the cellar in the fall, they may be planted as soon as the weather will allow. Make the cuttings 6 inches long, set them in a trench 3 inches apart and deep enough to cover all but 2 or 3 buds, pack the earth in firmly and keep clear of weeds. The best sorts for market are Versailles and White Grape. The Black Naples is the best black. Give established bushes a good manuring, and apply a mulch before dry weather comes.

Gooseberries are propagated in the same manner as currants, and require the same general treatment. Unless one can give great care it is useless to try the English sorts. The American varieties rarely mildew, and furnish an abundance of fruit which is generally used in an unripe state for cooking. Downing's and Houghton's are the best.

Blackberries.—If the old canes were not cut out after the fruiting was over last year, do it at once. Manure if not done last fall. New plants are made from the abundant suckers which most kinds form, or from root cuttings made in the fall. Take up the suckers as soon as the frost is out, with a good bit of root attached, and set six feet apart in rows, cutting the cane or stem back to the ground. The most generally successful variety is the Kittatinny; Wilson's Early is a good market sort. New Rochelle or Lawton is good when thoroughly ripened, but tender in many places.

Raspberries.—Many kinds are propagated in the same way as blackberries. These too should be set early. Old plants, which should not have more than 3 or 4 canes to the stool, will need manure, and later a mulch. Provide stakes, wire, or some support to tie to. The varieties are numerous, and a selection is difficult. Hudson River, Antwerp, and Brinckle's Orange are the finest, but require protection in winter. Clarke, Herstine, are good, and usually hardy. Philadelphia is hardy, most prolific, but not first quality. Highland Hardy is a new sort highly recommended.

Black Caps, or black raspberries; these with a few red-fruited kinds are propagated only by the rooting of the ends of the stems, they form no suckers. Mammoth Cluster or Miami, Seneca, and Doolittle, are among the best.

Strawberries.—The treatment of old beds will depend upon the system of culture. In the garden where the plants are in rows, and were mulched last fall, all that need be done is to go over the beds, when growth begins, and remove the hay or other mulch from directly over the plants and leave it until the fruit is off. Spring planting is vastly preferable to fall planting. Set the plants as soon as the frost is out. In garden culture we prefer to grow in rows, set the plants a foot apart in rows 3 feet from one another. Work the soil deeply and manure heavily. The varieties are many, but at present we cannot improve on the list given last year. The best variety for all soils and situations we consider to be Charles Downing. The Wilson has had that place, but it is of far inferior quality; the Charles Downing is the best general family berry, and it is good for marketing. For early, Nicanor for heavy, and Downer for light soils; for main crops, Charles Downing and Wilson, on both soils. For late, Triomphe de Gand and Jucunda on heavy, and Seth Boyden and Kentucky for light soils. Gen. Cheney has a high reputation, but we have not tried it. As a variety of the first excellence, we mention Black Defiance, and for great size, the Champion.

Cherries on account of insects and diseases have been well nigh abandoned in many places. Wherever it will succeed, the cherry should be planted. It cannot be so decidedly dwarfed as the pear and apple, but on Mahaleb stock and properly pruned, the trees may be kept of moderate size. The young trees should be started with a low head and kept

compact by pruning. The varieties are many. The Early Richmond, a very early excellent cooking cherry, succeeds where better sorts fail. Among the best for the garden are Black Tartarian, Coe's Transparent, Rockport, Louis Philippe, Late Duke, and Black Hawk.

Plums have been subject to the same drawbacks as cherries. By persistent jarring of the trees and catching the curculio, good crops may be had. If worked on the Canada or wild plum, it may be kept small by pruning. Green and Imperial Gages, Coe's Golden Drop, Jefferson, and Washington are among the best. The Wild Goose and other natives are not curculio proof, but are worth trying.

Peaches may be kept in a very compact form by proper shortening of the branches. Amateurs who have the time should look at the Cordon training described in the *Agriculturist*. Those who grow peaches on the large scale for market select such varieties as will ripen in succession through the season, without much regard to quality. For the garden, Early Beatrice, Hale's Early, Early York, Oldmixon Free, George the Fourth, and Ward's Late Free, would be a good selection.

Pears.—Where space is limited, dwarf trees on quince may be planted, but standards may be kept of moderate size by training as pyramids, and are much more productive. The one variety that succeeds almost everywhere is the Bartlett. If there is but one tree on the place it is likely to be this. There is a wide range for selection. A few choice garden sorts are, *Early*, Doyenné d'Eté, Clapp's Favorite, Bartlett, Doyenné Boussock. *Fall*, Duchesse d'Angouleme, (on quince), Belle Lucrative, Sheldon, Seckel, Beurre Bosc, Louise Bonne de Jersey, (quince). *Late Fall and Winter*, Beurre d'Anjou, Lawrence, Vicar of Winkfield, Winter Nelis.

Quinces may be raised from cuttings a foot long set with only two buds above the surface, or more surely by layers. If care is taken with the young trees they may be given a handsome form. The Apple or Orange is the most generally grown. Rea's Seedling, (rather scarce), is the largest and finest.

Grapes.—It must be a small yard that has not room for one vine, and every farmer's family should have all the grapes they can eat and some to give away. Those who grow for market will not look here for advice. The universal grape, corresponding in popularity to the Bartlett among pears, is the Concord. Every one can grow it, as a cutting of 2 or 3 buds is very sure to make a plant. Many others can be raised in the same way, while some must be started under glass. Buy only one year old vines; cut back to 2 or 3 buds, and let only one shoot grow. The list is a large one, and tastes differ. Concord, Creveling, Barry, Eumelan, Senasqua, and Wilder are all good black kinds, Catawba and Iona in favorable localities, Delaware and Salem are among the best of the reds. The Croton and Martha are the white kinds most likely to succeed.

Mulberries.—Downing's Everbearing and the Black Persian are the best.

Kitchen Garden.

No matter how far south one may live, he likes to have his vegetables, or some of them, earlier than they can grow from seeds in the open ground, hence some glass protection is in common use. A spot of ground covered by a frame, upon which are glazed sashes, is what is known as a

Cold Frame.—The frame is 12 inches high at back, 8 inches in front, and of a size to fit the sash. Sashes 3 x 6 feet are sold by sash makers glazed at about $3 each. They may be home-made, or old windows may be used. The sash should slope towards the sun. Light shutters or mats should be at hand to put on at night and very cold days. Seeds may be sown in such a frame much earlier than in the open ground, and the young plants protected from cold nights will grow rapidly. The sashes must be lifted at the upper end and held open by a stick during the warmer part of the day, and in warm days be taken off. Here the heat of the sun is retained by covering at night, but in

Hot-Beds heating material is used to warm the soil; this is usually fermenting manure. The simplest hot-bed for ordinary gardens is made by digging a pit 2½ feet deep and of a length and width to suit the sashes; this is planked up all around, the rear planking reaching 12 inches, and the front 4 inches above the surface of the ground, the ends sloping from back to front, which should face the south. The heating material may be stable manure brought into active heat by turning a few times at intervals of a few days, or a part this and a part leaves. A good plan is to put in a foot of leaves, then 18 inches of manure, or it may be all manure, in both cases trodden down evenly and firmly, over this place 6 inches of good soil, or if boxes are used, (see page 99), only enough to make the surface even. There should be strips across the frame from front to rear for the sashes to run upon. The heat may be very violent at first, when it falls to 90° sow the seeds in rows about 4 inches apart, or what is better, set in the boxes in which they have already been sown. Another method is to build up a square pile of fermenting manure or alternate layers of manure and leaves, beating it firm with the fork and keeping it compact. This should be two feet wider and longer than the frame, made like that described for the cold frame, which is here set upon the manure instead of upon the ground. Soil is to be placed upon the manure, or boxes may be used. Great care in opening in the day and closing and covering at night are demanded, and unless one has time to give it proper attention, he had better rely upon

Window-Boxes, which are well nailed flat boxes about 3 inches deep and of any convenient size otherwise. These are to be nearly filled with good soil, the seeds sown, and then set in the window of the kitchen or other warm room. Of course water must be given as needed, and when the plants are large enough to handle, with three leaves besides the seed-leaves, they are to be transplanted to other boxes and set an inch or two apart, and shaded until they recover. If they grow so large as to crowd, transplant again. We have given directions over and over again about hot-beds, frames, and the like, but every season there are many to whom these things are all new and strange, whose inquiries we have to regard.

Varieties.—Every year new sorts of vegetables are offered for which superior excellence is claimed. We test all such, and so do others who are on the look-out for novelties. In the following list we give the names of varieties that not only have been tested on our own ground, but have received general approval.

Asparagus.—Conover's Colossal is the best. Seeds may be sown or plants one and two years old purchased. In field culture for market set the plants at least 2 feet apart each way, (some set 3 x 4), and cultivate by horse implements. In small gardens rows 2 feet apart with the plants a foot apart will be better than closer. Remove the covering from old beds and give a dressing of well rotted manure, forked in carefully so as not to injure the crowns.

Beans must not be planted until there is no danger of frost. Early Valentine and Dwarf Wax are good bush sorts for early snaps. Caseknife, Large and Small Limas, are best pole sorts for shelling; for snaps the Giant Wax and Asparagus bean.

Beets may be sown after the ground is thawed, in rows one foot apart, sowing thickly to give plenty of beet greens. The best early is Egyptian Blood, Bassano is good, and for late the Long Blood.

Borecole or Kale, and Brussel's Sprouts are varieties of the cabbage, and require the same treatment. Of Borecole, the kind known as German Greens is most popular. The Dwarf Brussel's Sprouts are best.

Cabbages.—Set out plants from the cold frame in which they were wintered, as soon as the ground is clear of frost. Sow seeds for second early in hot-beds this month. Jersey Wakefield for earliest, Early Winningstadt and Early Summer, and Ulm Savoy for medium, and Drumhead, Flat Dutch, Drumhead Savoy, and Red Dutch for late.

Cauliflower.—Sow Early Paris and Early Erfurt in hot-beds the same as cabbages. Give them the richest spot in the garden, and careful watering and cultivation; even then they often fail; but they are so fine that it pays to take the trouble even if one can only get a partial crop. Set out plants that were wintered in cold frames.

Carrots.—For table use the Early Horn is best for both early and late; it is not so large a cropper as Long Orange and others. Sow in rows a foot apart.

Celery.—Sow seeds in a slight hot-bed, or early in the open ground. Dwarf White, Boston Market, and Dwarf Crimson are best.

Chives start early in the spring; clear away the old tops and spade under some manure. Propagate by dividing old clumps.

Corn must not be sown till all danger of frost is past. Among the best are Early Minnesota, Triumph, Moore's Concord, Mexican, and Stowell's Evergreen. If planted every two weeks until the last of June, a succession may be had until late fall.

Cucumbers.—Sow on the earth-side of pieces of sod and place in a hot-bed; set these in the hills when frosts are over, or prepare a few hills in the open ground with fermenting stable manure, and cover with a hand glass. Either method will give a crop far in advance of the open ground plantings; Early Russian, White Spine; Green Prickly is to be sown in June, for pickles.

Egg Plant.—Sow in the warmest part of the hot-bed, as the seeds require more heat than most other, Long Purple is earliest, Black Pekin and Improved New York are largest and best.

Horseradish is easily grown from sets in well-manured ground, and the product is much better if planted anew every year. Set two feet apart and one foot in the rows. It may be planted between the rows of early cabbages, as they will be out of the way before that has made much growth.

Kohl-Rabi.—Sow Early White in open ground in rows two feet apart, or sow in seed-bed and transplant in rows ten inches apart.

Leek.—Take up those left in the ground over winter. Sow seeds of Large Flag the same as onions.

Lettuce.—Set out plants from the hot-bed and cold frame as soon as large enough to handle and frosts are over. Sow seeds for second early, uncover and loosen the soil around that sown last fall in the open ground. The varieties are many; we have found Early Simpson, Hanson, and Tennis Ball to be satisfactory.

Melons require similar treatment to cucumbers. White Japan, Cassaba, Hackensack, and Ward's Nectar are all good, and the catalogues give others; do not plant until the ground is warm.

Onions.—Sow Yellow Danvers and Early Red in drills 15 inches apart in an abundantly manured soil. A good dressing of wood ashes may be given after the plants are well up. Onions from seed are not certain south of New York. In such localities sets must be planted; both seeds and sets should be got in early. Also put out potato and top onions.

Parsley seeds need soaking for a few hours in warm water before sowing. Sow early. Thin to 4 inches. The Double or Moss Curled is best.

Parsnips.—Sow early in deep, rich soil; the Hollow Crown or Cup in 18 inch drills; dig roots which were left in the ground over winter.

Peas.—It is our practice to put in a few rows of Daniel O'Rourke or Carter's First Crop as soon as the ground is thawed. They may now and then fail, but the risk is worth taking. These are not of so good quality as the wrinkled sorts which will rot if sown before the soil becomes somewhat dry and warm. The best early wrinkled pea is Alpha. For main crop there is nothing better than Champion of England, but there are numbers in the catalogues that may be tried. In small gardens the dwarfs, which need no stakes, are valuable, as they can be put in various spare places, between rows of later plants and thus utilize every foot of ground. Little Gem and Blue Peter are both excellent. Sow the tall varieties in double rows 6 inches apart, and set the brush between them.

Peppers.—Treat the same as egg plants. Squash for pickling and Sweet Mountain for stuffed pickles.

Potatoes.—Only early sorts should find a place in the garden. A few may be forwarded by starting the sets in boxes of earth in a hot-bed, and some

may be put in the open ground early at a venture. Early Rose and Early Vermont are the established early varieties. Alpha and Snowflake are varieties of great promise, and Thorburn's Early Paragon is claimed to be "the best early yet introduced."

Radishes.—If wanted early, sow in a gentle hot-bed or cold-frame. French Breakfast, Olive Shaped, and Early Turnip. When the ground is open sow in drills a foot apart once a week for a succession.

Salsify.—Sow seeds early the same as parsnips. Dig roots left in the ground.

Scorzonera.—Treat the same as salsify; by many is thought to be superior to it.

Spinach.—Round Leaved is best; sow early in drills a foot apart. New Zealand for summer use is sown when ground is well warmed. Uncover beds sown last fall; hoe between the rows and it will soon be fit for use.

Sorrel is valued by many as early greens; mixed with spinach gives that a pleasant acid flavor. Sow in seed bed and transplant into rows 18 inches apart and 15 inches in the rows.

Sweet Potatoes.—If only a few are wanted it is cheaper to buy the plants than to grow them. Southern Queen and Nansemond are best. The sets may be grown by placing the potatoes in good soil in the hot-bed.

Squashes.—If desired early they may be started in the hot-bed on sods as directed for cucumbers. Summer Crookneck is best early; many like the Scolloped Bush, of which there are are white and yellow. Boston Marrow and Turban are best late summer and fall, and for winter the Hubbard and Yokohama are standard sorts. See the new Butman noticed on page 48, last month. The late sorts need a warm and highly manured soil with more manure in the hills.

Tomatoes.—There are many good sorts, but one cannot go amiss if he takes Conqueror or Canada Victor for early, and Trophy for main and late crops. Start in hot-bed or window boxes and transplant once, if not twice, before setting out. A few may be petted in pots to be turned out when it is safe.

Turnips for spring must be sown very early. Early Flat Dutch is best early. For late, Red-top Strap-leaf is best of the flat kinds. Of the Ruta Baga sorts the White French is superior to all others for the table and best for garden purposes.

Flower Garden and Lawn.

Notes in this department as well as that of

Greenhouse and Window Plants.

must be deferred until another month, as we have taken more space for the others than will be again required. In the first only works of preparation can be done in most localities. The increase of sunlight will stimulate rapid growth of plants under glass; with these the principal things to look after are propagating, killing insects, and the gradual hardening off of such as are to go out of doors.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Feb. 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	216,000	513,000	2,811,000	9,200	218,000	374,000
23 d's *last* m'th	324,000	459,000	1,617,000	13,800	57,000	407,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	270,000	2,096,000	2,907,000	21,000	142,000	1,119,000
23 d's *last* m'th	291,000	2,911,000	1,918,000	34,000	251,000	2,105,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye*	*Barley.*	*Oats.*
26 days 1875...	216,000	513,000	2,811,000	9,200	218,000	374,000
26 days 1874...	402,000	3,175,000	1,004,000	61,000	166,000	895,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875.	279,000	2,096,000	2,907,000	21,000	142,000	1,119,000
26 days 1874...	296,000	2,312,000	1,597,000	131,000	813,000	1,437,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Feb. 8, 1875..	3,269,000	1,408,485	50,899	256,928	945,137	137,120
Jan. 11, 1875..	3,675,122	1,049,900	50,889	191,470	877,014	145,617
Dec. 7, 1874..	4,513,396	1,220,973	15,925	168,391	890,899	135,622
Nov. 9, 1874..	3,680,141	1,727,510	19,123	117,185	794,722	135,882
Nov. 10, 1873..	1,720,338	3,133,896	22,907	232,942	755,153	82,674

4. *Exports from New York, Jan. 1 to Feb. 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875....	212,846	1,481,150	4,735,119	90	12,549	19,482
1874....	291,169	2,916,000	1,442,700	104,215	——	10,900
1873	152,290	705,286	2,004,569	——	6,700	2,761
1872....	——	836,639	2,078,208	70,603	——	2,682

Gold has been up to 115¼, and down to 113, closing February 12th, at 114⅝ as against 112¾ on January 12th ... Breadstuffs have been depressed and generally lower in price, the offerings having been more liberal, while the demand for home use and shipment has been on a restricted scale. The export inquiry has been checked by the unfavorable foreign advices. Toward the close, Flour, Wheat, Rye, and Barley, favored buyers; while Corn and Oats were quoted stronger, these influenced, to some extent, by speculative purchases....Provisions have been generally less freely dealt in at reduced prices. Hog products have been particularly weak and variable ....Cotton has been more active, and quoted firmer.... Wool and Tobacco have been less sought after within the previous range....Hops have been quoted lower, on a limited business....Hay, Straw, and Seeds in fair request, and held with firmness.

CURRENT WHOLESALE PRICES.

	Jan. 12.	Feb. 13.
PRICE OF GOLD	112 3-8	114 5-8
FLOUR—Super to Extra State	$4 00 @ 5 75	$3 85 @ 5 65
Super to Extra Southern	4 75 @ 7 25	4 60 @ 7 25
Extra Western	4 60 @ 8 00	4 50 @ 8 00
Extra Genesee	5 00 @ 6 75	4 90 @ 6 50
Superfine Western	4 00 @ 4 50	3 85 @ 4 35
RYE FLOUR	4 00 @ 5 25	4 00 @ 5 20
CORN-MEAL	4 00 @ 4 85	3 90 @ 4 75
WHEAT—All kinds of White	1 25 @ 1 35	1 24 @ 1 32
All kinds of Red and Amber	1 07 @ 1 31	1 02 @ 1 26
CORN—Yellow	87½@ 90	82 @ 85
Mixed	86 @ 96	80½@ 82
White	87 @ 89	81½@ 85
OATS—Western	67 @ 71	66 @ 70
State	65 @ 71	66 @ 70
RYE	93 @ 96	90 @ 96
BARLEY	1 25 @ 1 60	1 30 @ 1 55
HAY—Bale, ℘ 100 ℔s	55 @ 95	55 @ 95
STRAW, ℘ 100 ℔s	45 @ 65	45 @ 70
COTTON—Middlings, ℘ ℔	15⅜@ 15⅝	15⅜@ 16
HOPS—Crop of 1874, ℘ ℔	37 @ 50	32 @ 47
FEATHERS—Live Geese, ℘ ℔	35 @ 65	35 @ 65
SEED—Clover, ℘ ℔	10½@ 10⅝	11⅛@ 11⅝
Timothy, ℘ bushel	2 75 @ 2 85	2 80 @ 3 00
Flax, ℘ bushel	2 05 @ 2 40	2 20 @ 2 30
SUGAR—Refi'g & Grocery ℘ ℔	6 @ 9¼	5¾@ 8⅝
MOLASSES, Cuba ℘ gal.	Nominal.	33 @ 39
New Orleans, ℘ gal	58 @ 67	55 @ 66
COFFEE—Rio (Gold)	17⅜@ 20½	17½@ 19½
TOBACCO, Kentucky, &c., ℘ ℔	9 @ 25	9 @ 25
Seed Leaf, ℘ ℔	8 @ 60	8 @ 60
WOOL—Domestic Fleece, ℘ ℔	28 @ 65	28 @ 65
Domestic, pulled, ℘ ℔	27 @ 55	27 @ 55
California, clip	16 @ 37½	16 @ 36
TALLOW, ℘ ℔	8½@ 9	8⅛@ 8⅜
OIL-CAKE—℘ ton	48 50 @ 47 00	44 00 @ 47 50
PORK—Mess, ℘ barrel	20 00 @ 20 50	19 25 @ — —
Prime Mess, ℘ barrel	18 75 @ 19 50	18 00 @ 18 25
BEEF—Plain mess	9 50 @ 10 50	9 50 @ 10 50
LARD, in tres. & barrels, ℘ ℔	13½@ 14½	13½@ 14½
BUTTER—State, ℘ ℔	25 @ 45	20 @ 40
Western, ℘ ℔	18 @ 35	15 @ 32
CHEESE	6 @ 16½	6 @ 16¾
BEANS—℘ bushel	1 60 @ 1 70	1 40 @ 2 30
PEAS—Canada, free, ℘ bu	1 25 @ 1 35	1 15 @ 1 25
EGGS—Fresh, ℘ dozen	29 @ 33	33 @ 42
POULTRY—Fowls	10 @ 18	8 @ 17
Turkeys—℘ ℔	10 @ 17	12 @ 18
Geese, ℘ pair	1 00 @ 2 25	1 37 @ 2 12
Ducks, ℘ pair	50 @ 1 00	— @ —
PIGEONS, ℘ pair	— @ —	30 @ 35
GROUSE, ℘ pair	50 @ 65	35 @ 50
PARTRIDGES, ℘ pair	40 @ 65	70 @ 1 00
VENISON, ℘ ℔	10 @ 16	— @ —
WILD DUCKS, ℘ pair	40 @ 1 75	40 @ 1 50
WILD TURKEYS, ℘ lb	15 @ 20	15 @ 20
QUAIL, ℘ dozen	90 @ 2 00	1 50 @ 1 75
HARES, ℘ pair	30 @ 50	45 @ 50
RABBITS, per pair	30 @ 40	35 @ 40
TURNIPS ℘ bbl	1 00 @ 1 25	1 25 @ 1 37
CABBAGES—℘ 100	4 00 @ 7 50	5 00 @ 8 00
ONIONS—℘ bbl	2 25 @ 3 00	2 25 @ 3 50
POTATOES—℘ bbl	1 62 @ 2 25	1 50 @ 2 12½
SWEET POTATOES—℘ bbl	3 00 @ 4 00	3 50 @ 4 00
BROOM-CORN	9 @ 15	9 @ 15
GRAPES, ℘ ℔	8 @ 9	— @ —
APPLES—℘ barrel	1 00 @ 2 25	1 00 @ 2 25
CRANBERRIES—℘ bbl	5 00 @ 10 00	4 50 @ 9 50
GREEN PEAS, new, ℘ bushel	1 85 @ 1 90	1 85 @ 1 90
SQUASH, ℘ bbl.	— @ —	1 75 @ 2 25

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Jan. 18	8,923	153	619	28,053	37,936	75,684
Jan. 25	9,474	74	629	25,476	35,474	71,127
Feb. 1	7,281	121	850	23,655	24,850	56,757
Feb. 8	8,148	80	690	18,229	29,685	56,902
Total for 4 Weeks	33,826	428	2,788	95,483	127,945	260,470
do. *for prev. 4 Weeks*	29,808	318	3,097	75,442	134,935	243,600

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	8,456	107	697	23,870	31,986
do. do. *last Month*	7,452	79	774	18,860	33,734
do. do. *prev's Month*	8,254	70	1,269	23,346	49,442

Beeves.—The market during the past month has been an unfortunate one for sellers. Unfavorable weather and dull business has depressed prices and weakened the market. The worst business of the season has been done in the past four weeks. At the close there was a little improvement, which helped to meet the advance in the West, but the market was weak. The new Stock Yards at 60th to 65th sts., were opened on Feb. 8, and hereafter no business will be done on Sundays. Monday will be the opening day, and yards and scales are to be locked on Sundays by united consent at all market places. Prices at the close ruled ¼c. to ½c. ℘ ℔. above last week, with sales at 8¼@13¼c. ℘ ℔ for native to extra steers to dress 54 to 58 ℔s. ℘ gross cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Jan. 18	8 @14¼c.	10¾@11¼c.	11 c.
Jan. 25	7 @13¾c.	10 @11 c.	10¾c.
Feb. 1	7 @14 c.	10 @10½c.	10½c.
Feb. 8	8 @14 c.	10½@11 c.	10¾c.

Milch Cows.—The market for cows has been steady and fair. There was a demand for all sorts at $45@$90 per head for cow and calf....**Calves.**—The sale for calves has been dull, but an improvement was noticeable at the close for milk fed veals. The best Bucks Co., Pa., veals sold at 11c. ℘ ℔, others at 8½@10½c. ℘ ℔; grassers brought $8@$17 ℘ head, the latter price being paid for fine western calves....**Sheep.**—The market has been very unsteady for this stock; generally prices have given way for poor sheep. At the close fair to prime sheep were fully ½c. ℘ ℔ better, bringing 7½@8c. ℘ ℔. Poor sheep were selling from 5½c.@5¾c. ℘ ℔.... **Swine.**—There have been no live hogs offered. Dressed hogs have improved, advancing to 8@8½c. for fair Western and 8½@9½c. for City dressed.

To be Had without Money.—There will be found upon our Premium List for the year 1875, a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but a little *well directed effort.* Among these are: **Beautiful Silver-Plated Articles—Fine Table-Cutlery—Gold Pens with Silver Cases—Children's Carriages, Swings, etc.—Watches—Pianos—Melodeons—Pocket-Knives—Guns—Cultivators—Sewing, Knitting, and Washing Machines—Books, etc., etc.**—Send for our Illustrated Premium List, and see how easy you can obtain one or more of these good and desirable articles.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ **N.B.—The New Postage Law.** —On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our Western Office.—Our friends in the West are reminded that we have an office at Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* are taken there, and sample copies of the paper and chromo are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

TWO COMMON MISTAKES.—First, that the **Premiums** are only available to a few individuals who have special facilities for securing them. Anybody, anywhere, can with trifling effort get together a larger or smaller list of names of subscribers, and in return receive **free** one or more of the large number of valuable and desirable articles offered in the premium list. **Second,** that these premiums are available only about the beginning of the year. They will be open

to all until next June, and all the names sent in by any person between October 1 and June 30, can be counted together for premiums. The premium desired for any list of names up to any day, will be sent whenever desired. March and April are both good months for making up premium clubs or enlarging those already begun. Spring work is opening, and those beginning to plan out their work will all the more feel the need of the aid of such a journal as this. If any one has failed to receive a copy of the **Illustrated** Premium List, please send for a free copy at once, by Postal-Card or otherwise.

SPECIAL OFFER.

The Beautiful Chromo, "The Strawberry Girl."

[Size, 14×20, in 18 colors.]

To every subscriber, whether new or old, whose subscription for the year 1875, whether single or in a club, shall be received while this offer lasts, and who shall send with his subscription 50 cents extra to pay for mounting, postage, etc., we will send one of the beautiful pictures, **"The Strawberry Girl,"** which has so delighted those who have seen or received it. This chromo will be mounted *on muslin*, with directions for putting it on a stretcher for framing. We have but a limited number of these fine pictures in stock, and this offer will continue only while any remain.

Help!—*Do somebody* help us to find out where a person lives who writes letters, and forgets his State, sometimes his town, and not rarely his name. Probably 50 persons are now looking for letters which we can not send to them, simply because he do not know where to direct or to whom.

A Great Convenience is the present facility for sending parcels through the mails. Any package of seeds, plants, books, merchandise, etc., not weighing over **four pounds** can be sent to the most distant and most secluded localities for 8 cents a pound—if the package be not perishable and will not be injurious to other mail matter. This for example gives the dweller in a remote section of Washington Territory a chance to secure good seeds from the best eastern dealers, or a dress pattern from New York City at a very trifling cost for carriage. We are very glad to pay our share of any deficit in Post-Office revenue while it affords such conveniences to our pioneers and other less favored inhabitants. Our readers, wherever located, can look over our advertising pages, filled by trustworthy men, and select and receive whatever they may wish in the way of spring supplies, and if mailable at all, obtain it in one place as well as another. A peck of choice seed wheat, for example, can be put in 4 pound parcels and carried anywhere within the United States for 32 cents a parcel.

The Catalogues.—On page 113 will be found a long list of catalogues of dealers, and another is given on page 8 of January last. These two lists should be studied by all about to purchase implements, seeds, trees, plants, etc., and one can not go amiss in ordering from any of the dealers there named, as we do not notice establishments that are not in our opinion trustworthy. We are often asked by letter to say which is the best nursery, seedsman, etc.; this we can not do. In former years we have given a brief description of each catalogue, but we have not space for that now. It is well to remember that the nurserymen try to keep all the regular kinds of fruit and other trees, and seedsmen all the well tested kinds of seeds. In novelties each has his specialties.

"Large and Respectable."—A newspaper having printed that on a certain occasion "there was a large and respectable meeting, etc.," the reporter was called to account by the statement that there was only one other person besides himself present. But he insisted that his report was literally true, for, said he, "I was large and the other man was respectable."

Advertising for Advertising.—The business of advertising agents is a comparatively new one. Messrs. Geo. P. Rowell & Co., have built up an immense business as advertising agents, by doing what they advise others to do. They advertise largely that they will advertise of others, and great is their reward.

"Where to Buy Things."—The hundred thousand or more letters annually coming to this office, contain almost numberless inquiries as to where this, that, and the other thing can be procured from trustworthy dealers. We try to answer many of these questions just as if they came from relatives, for we aim to treat all our readers as personal friends. But the hours of a whole year are too few and too short for us to correspond with a tithe of them individually. Much of this correspondence can be saved if our readers, before writing, will look through the pages allotted to business or ad[illegible] variety of articles tell what they have to part with, and generally give prices and terms, or offer circulars or catalogues giving particulars. From the care exercised in admitting advertisers (not half of those wishing to use these columns can get in at any price, because unworthy), we believe that, as a whole, no superior or more trustworthy class of dealers were ever found together. Those in charge of that department are positively directed to admit no advertiser to whom they would not themselves send an order with cash in advance. As previously stated, we think it will pay every reader to look all through the advertisements in every number. One can hardly do so without getting some suggestion or business hint that will be directly or indirectly useful. When ordering of any of our advertisers, or sending to them for information or circulars, catalogues, etc., let them know that you belong to the great *American Agriculturist* family of readers, and you may expect, and will receive, good treatment. If you don't, please let us know it.

Post-Office Statistics.—A statement from the Post-Office authorities at Washington, gives the amount of mail matter of all classes, sent from 50 of the largest cities, for a period of four weeks, commencing Dec. 1st, 1874. From this we learn that while New York sends by far the largest number of pounds of mail matter, amounting to 1,639,753 lbs., Washington is greatly ahead in the amount of books and seeds sent through the mails. Of books Washington sends 71,075 lbs., against 35,349 lbs. from New York. Of seeds Washington sends 23,040 lbs., while New York sends only 814 lbs. New York sends 3,770,175 letters, this number being much larger than that of any other city; Philadelphia ranks second, and Boston third. Of newspaper packages New York sends 242,311 pounds, this amount being nearly 15 times as large as St. Louis, which in this respect ranks next to New York; the grand total in number of pieces sent from the 50 cities named, is 41,241,990, which weighed 4,543,018 lbs. The government seed shop and book publishing establishment tell upon the mails.

"Fumigation."—All articles, especially where other persons are mentioned by name, should have full address—not necessarily for publication.

Carr & Hobson.—This firm has been strengthened by the addition of Mr. Geo. S. Parsons, who has had a long business experience. The firm will continue in the agricultural implement business under the old name, and at the old place, 56 Beekman St.

Hoosac Thornless Blackberry.—We can not reply to inquiries in regard to this from our own experience. Our plants are not old enough to bear. The canes are smooth, though there are a few small prickles on the under side of the leaf-stalks, but no proper thorns. The variety was discovered near the Hoosac Mt., Mass., by Mr. Frank Ford, who took it home to Ravenna, Ohio, where he has since fruited and propagated it. We have not seen the fruit, but several of the Western papers speak highly of its quality, and Samuel Miller, and Col. Harris, both well known to the horticultural community, are quoted in commendation. Mr. Ford claims it is superior to the varieties usually cultivated. In view of the lack of thorns, most persons would be content with a little less excellence in the fruit; but if this combines superior fruit with unarmed stems, it can not fail to become popular.

Subsoil Plow and Pronged Hoe.—The subsoil plow commended in Mr. Henderson's article, is made by R. H. Allen & Co., of this city, and sold by the dealers generally.... "L. T.," Hexamer's Pronged Hoe, is also made by Allen & Co., and is one of the most useful implements ever devised.

Chesapeake and Ohio Railroad.—We have always had strong faith in this through line between the great West and the Seaboard, and we hold some of its bonds bought for cash at full prices. When the "panic" put it in temporary embarrassment we promptly acceded to the proposals which looked to bridging over the immediate difficulty, and opening the way to its future prosperity, convinced then, as we now are, that that would in the end be the best for all parties concerned, and we hope all who hold the securities of the road will speedily embrace the proposition so that there shall be no delay in carrying out the enterprise. Those interested should send to Messrs. Fisk & Hatch and get the annual report issued February 1st, showing what the road is doing and its future prospects.

"Several Preachers."—The latest reports give the number of Wesleyan, or Methodist Preachers throughout the world as 23,511; and the number of Methodist communicants at 3,692,768, not including several hundred thousand "probationary members." Place the ministers one mile apart in a row, and the line would nearly encircle the earth. If the regular members were placed in the same way, they would be only 35 feet, or a little more than two rods apart. An "Amen," or "Hallelujah," could therefore be readily "passed along the line" clear round the world!

Fearful Mortality.—A Sunday School Journal, having some 75,000 circulation, announced in Dec., that "All our Subscribers will expire Jan. 1, 1875."

A Remarkable Statement is that made by the N. Y. Mutual Life Insurance Co. It speaks for itself upon another column, and all interested in Life Insurance are advised to look over its figures.

SUNDRY HUMBUGS.—Within the limits allowed to the Humbugs, we have not much space for the discussion of general principles, or to argue points in morals. We assume that all gambling, in the form of lotteries or any other shape, is wrong, and the great majority of thinking people agree with us. Now and then one disputes this position, and asserts that a lottery fairly conducted, is not gambling, and that one who buys a ticket takes his chances of getting back nothing, or receiving more than he paid, and that as he does this knowingly, there is no harm in it. Let us suppose, what is very rarely the case, that a lottery is conducted fairly, we still find it a pernicious affair. To illustrate: If ten men put in a dollar each, and agree that one of them who draws a white bean, that has been placed in a box with nine black ones, shall have the whole $10, it would be in the view of these persons, a fair arrangement, and as a lottery, vastly more upright and above board than any lotteries are, and some persons would say that as all went into it understanding the terms, no wrong was done. We look beyond the thing itself, to its influences. We will suppose that these ten men are laborers, or men whose work brings them $1 a day. Nine of them have received nothing in return, while the tenth man has gained $9 and done nothing for it; he has not done a stroke of work, exercised a particle of skill, or done anything that the rest have not, to entitle him to the $10, but blind chance or luck has put them into his hands. The dollar that each put into the game, was needed at home, the family of each unlucky one suffers on account of its loss; the losers, half ashamed and half angry, are determined at the very next opportunity to try it again, and get their lost money back with interest, while the winner, having easily made, without effort, what he would have had to work nine days for, is not at all inclined to go to work, he has found an easier method of getting money; he will take a day or two for himself, perhaps console the unlucky ones by "treating" them, and be on the lookout for another chance. Does any one with a fair knowledge of human character, fail to see that the effects of this simple and honestly conducted lottery, must be altogether bad, demoralizing to those taking a part in it, and a source of discomfort to their families. The loss of the money is the least important, but the passions aroused, the whole effect upon these men can not be other than to make them less valuable members of the community. We have supposed a very simple lottery, with trifling sums at stake, but increase the ten dollars to hundreds or thousands, as in the large lotteries, the evil effects upon those who engage in them, and consequent injury to the community in which they are tolerated, will be correspondingly increased. In the assumed case of the ten men, the whole affair was managed by themselves, and all the money put in was paid out to the lucky man. Let us suppose that another, an eleventh man, proposes the game or lottery to the ten, each of whom puts in his dollar as before, but the lucky one is to have only $5, the eleventh man keeping $5 for his trouble of receiving the dollars, providing the beans, and paying out the $5 to the lucky one who draws the white bean. The result in this case will be that nine men will lose $1 each, one man gains $4 without having done anything to earn it, and another man gets $5 for doing no useful work, but a really harmful one in inducing the others to engage in the game. It is not the least of the bad features of the lottery in all its forms, that it allows a few men who produce nothing, and who instead of promoting industry by legitimate business, carry unhappiness to hundreds of homes; to grow rich at the expense of the industrious. Looking at it in all its bearings, we regard the lottery as pernicious in its effects to those few who draw prizes, as well as to the many who draw blanks; and we include in this all the forms and disguises of the lottery, whether called gift concerts, distributions, or what not, and no matter what charitable, or in itself worthy, object is used to cloak its ugly shape. Indeed, we regard the open and declared lottery more respectable than the scheme that skulks behind some other name, and pretends to be working for a charity, while its whole end and aim is to make money for the managers. But few greater misfortunes can befall a young man just starting in life, than

to draw a prize in a lottery. Almost every one who can remember the times when lotteries were not only tolerated, but legal, can recall cases in which men were absolutely ruined by drawing a prize in one of them. The gain of a few thousands in this manner, unfitted them for all useful business ever after, and they ruined themselves in endeavoring to repeat their former luck. Those who do not regard lotteries as gambling, and hold them to be fair investments, do not make very wise distinctions in morals, and they are in a very small minority; the better thought of the community, as expressed in the laws of almost every State, is against them....The extent to which this lottery evil extends, is not generally known, and the unhappiness it causes wives, mothers, and children, who see those they love carried away with the passion for this form of gambling, is most saddening. We every now and then receive

MOST PATHETIC APPEALS

from those whose homes are being ruined, asking what can be done to arrest the destructive influence of the lottery. Some of these letters are so touching, that they would almost reach the heart of a lottery manager. Alas, what can we do to help them! Those addicted to this form of gambling, will resort to every device and subterfuge to gratify their passions. In the majority of cases, they procure their tickets from a distance by mail. We have had complaints that tickets were sold in New York, and we have been asked to try and stop their sale, but the authorities say that they can do nothing unless a formal complaint, with proofs, is presented to them, which the parties who write us are unable to furnish. If one is infatuated by this or any other form of gambling, he will find means of indulging in it, and there is no large city in which lottery tickets are not sold.... Another frequent source of domestic misery, is

PRIVATE BANKING HOUSES.

That some of these are of the highest character, undeniably safe, and a benefit to the community in which they are placed, we have no doubt, but there are others quite the reverse of these, and are nothing less than swindles. Every now and then a man, whose reputed wealth gains him the confidence of his employees and others, by means of a bank gets possession of a large sum, made up of the "little all" of hundreds of hard-working people, A crash comes, and misery follows to all concerned, except to the banker, who we have more than once noticed continues to live in the same style, and drive in as fine a turnout as before. Cases of this kind have occurred within our own knowledge, and they happen all over the country every year. The sufferers are only poor work-people, whose little deposits of $5 to $100 are not large enough to make a noise in the financial world. A case which recently occurred in New York State is thus described by one of our old subscribers: "The rural population of this county, and the hard-working men and women of —— and neighboring villages, have been victimized a short time since to the amount of about three quarters of a million of dollars by the failure of the two private banks. These two cases, and a similar one which occurred at —— a few years ago, are considered here as premeditated swindles. Hundreds of people of small means, enticed by the highest rate of interest paid by these private banks on deposits, invest in them, and take a simple note of hand (Deposit Certificate) of the private banker, and that is all they have as security for their hard earned dollars. Thus, with a capital of say $25,000, the private banker receives in some cases *one half a million of dollars*. It is not strange if, with these funds in his possession, upon which he pays a full legal rate of interest, he should be tempted to dabble in Wall Street, or in some wild cat scheme, to make money, or fail to secure to himself by some sharp practice a good share of the deposits, as was the case here." —Too much caution can not be exercised by those who have earnings to deposit. A regularly incorporated savings bank is safer than any private bank can be, and though losses sometimes arise from these, it is very rare, and they are probably as safe as anything that can be devised. The offer by a private bank to pay a higher rate of interest than that given by the savings banks, should put people on their guard. "Slow and safe" is the best rule in such matters....These so-called

PUBLISHING COMPANIES

are getting to be a nuisance. They spring up in all sorts of obscure towns in various parts of the country, but the New England States seem to be the most infested. The circulars of these "companies" are as near alike as a lot of beans. We have before us the circular of one that calls itself "Union," and it presents a union of nastiness and balderdash absolutely disgusting. These circulars offer various things, from false whiskers to false playing cards, but their end and aim is to advertise "Marriage Guides," "Hidden Secrets of the Egyptians," "Lovers' Own Library," etc., which are set forth in the circulars in a manner likely to tempt young people into buying them, and if the books are as bad as the circulars would lead one to infer, the sellers of them should be set to hammering stones in the penitentiary. The trouble with these miserable things is that we can not expose them as they deserve, without doing that which of all other things these companies would delight to have us do—advertise them....Among the humbugs especially designed to

CHEAT FARMERS

is the "Golden Butter Compound," which every now and then turns up; this time it is being run by some chaps in Marion, Ohio. This stuff proposes to make butter at a cost of four (4) cents a pound, and of a quality which can not be distinguished from "cream butter." The compound is sold in boxes to agents at 50 cts. a box, and is to be sold by them to the farmer at $1. Now, a farmer of average shrewdness and hard sense will say, "This fellow says butter can be made for four cents a pound; I get 20, 30, and sometimes 40 cents a pound for my butter; why don't he make butter and control the market, and not be howling and screaming through his circulars for agents to buy his stuff and sell it all over the country? This butter compound man doesn't seem to me to have much confidence in this stuff himself, for if he can make butter at that price, he can be a millionaire at once." And the shrewd farmer would be right. We need only add that the concern which makes this butter compound is also engaged in selling "The Oil Purifyer and Lamp-chimney Protector."

MEDICAL MATTERS

seem to be very quiet, and our budget is mainly a repetition of the old stories. A Missouri friend sends us the consumption circular of Daniel Adee, and asks us to give the concern "a call." We thought we had said sufficient of Daniel last year. It is the old dodge over again. A gentleman's son was in the last stages of consumption; he was of course "given up to die by the most eminent physicians," but a "remedy" saved the son's life, and now said "gentleman" will "gladly make known the same," and those who send their address to D. A. can get the "recipe" all for nothing. We did not have the consumption, but not knowing how soon we might have it, sent last summer to D. A. for the recipe, as it must be a handy thing in the house. Easy enough to cure the consumption now, just take some of the "Indian Cough Plant," steep it, and drink thereof, and the consumption will "git up and git." There is a slight difficulty in the way. The "Indian Cough Plant" is only to be had among the Indians, and for the benefit of suffering mortals Daniel A. will furnish the same, all fixed up, for $2 a bottle. Our new readers may not be aware of the ways of these benevolent people, who offer to send recipes free, and this will serve as a sample of a large lot. It all means money.

What to Plant.—See the notes about work, under Orchard, Fruit, and Kitchen Garden, where carefully considered lists of the best fruits and vegetables are given. These notes always embody replies to many queries, and this month they are unusually full.

Bone and Blood Spavin.—"Enquirer," Taunton, Mass. A spavin of long standing is rarely cured, being generally either constitutional, or resulting in a permanent alteration of the parts. Bog or blood spavin, may appear on both sides of the joint, or the lower part of the limb, in which case it is called thoroughpin. When it appears below the hock, it is sometimes mistaken for windgalls. These soft spavins do not always cause lameness, but a bone spavin nearly always does, and it is therefore the worst.

To Remove Warts.—"O. P. K.," Ellsworth, N. Y. Warts upon horses may be removed by the daily application of a solution of nitrate of silver (lunar caustic) to their surface.

The Best Feed Cutter.—"Would you buy a Gale's Copper Strip Cutter, in preference to any other, to be used either by hand or horse-power?"—For cutting by hand, we know of no other machine that works so easily, or cuts so rapidly as Gale's Copper Strip Cutter. But for horse-power there are machines that can be fed more easily and speedily—and this is an important point. Those who have a large horse-power, should get a six or eight horse-power feed cutter, and go round amongst the farmers to cut fodder, as they now do to thrash grain. The feed cutter should have an elevator attached, for carrying the cut fodder where it is wanted. Where the buildings are convenient for storing the cut feed, most farmers will find it cheaper to hire such a machine, than to do the work themselves.

Short-horn Statistics.—The National Association of Short-horn Breeders, which recently met at Springfield, Ill., having entrusted Alex. Charles, Cedar Rapids, Iowa, with the work of procuring complete statistics of all Short-horns now living in the United States and Canada, for publication in the report of their proceedings, we would urge upon every one of our readers who are breeding Short-horns, either upon a large or small scale, to send in prompt and careful returns, and those who have not received blanks for that purpose, will be furnished them free of charge promptly, on application to Mr. Charles. Short-horn men will please give this their very earliest attention, for by so doing the forthcoming report of the American Association of Breeders will be made the most valuable and interesting publication ever issued in this country.

Artificial Hatching of Eggs.—"J. R. C.," Huron, Iowa. The process of hatching eggs packed in sand in a tin-bottomed box heated by steam from a boiler, would be a very risky one. The eggs would become cooked at the outset without much doubt. The heat required to hatch eggs is 102 to 104 degrees. A higher temperature would kill the embryo. It would occupy more space than we could spare to describe the methods of incubating eggs and caring for the chicks. You had better get a copy of Wright's Practical Poultry Keeper, price $2.00.

Diseases in Hogs.—"J. F.," Madison, Ind. Want of water, insufficient shelter from the heat, and indigestible food, are frequent causes of diseases amongst hogs in the summer and fall. The diseases thus produced chiefly act upon the blood, inducing fevers mainly of a typhoid kind, and inflammations or congestions of the vital organs. The disease known as cholera is one of the most conspicuous of these, but that is simply one of the particular manifestations of the general disorder. It is rarely of use to try to cure any cases. The attack is too sudden and violent for medicine to avail. The remedy lies in prevention. When well cared for, the hog is one of the hardiest of animals, and good care means nutritious food, plenty of pure water, shelter from the burning sun, clean, dry pens when they are confined, and a regular allowance of salt.

Bran or Oats for Cattle.—"C. A. J.," Hudson, Mich., asks if it is better to sell oats at 45 cents a bushel, ($28.12 per ton), and buy bran at $16 per ton, or feed the oats ground to cows and young cattle?"—So far as nutriment is concerned, we think the oats the cheaper food. But the manure from a ton of bran, is worth twice as much as from a ton of oats. (see table in "Harris on the Pig," page 139). So that at the above rates the same amount of money spent in bran, would give manure worth nearly four times as much as from oats.

Catarrh in a Cow.—"O. D. S.," Delaware Co., N. Y. The symptoms of catarrh are a stoppage of the nasal passages, and the discharge of mucus from the nose, with considerable fever and debility in severe cases. Where the attack is a light one, bran mashes given slightly warm, and a little careful nursing are all that are needed to effect a cure. Where there is fever, and redness in the eyes, and weeping, daily doses of 2 ounces of sulphate of potash dissolved in a pint of water, may be given until the fever disappears. This disease is the result of exposure to cold or damp.

Barley.—"J. D. B." asks, "Which is the most profitable variety of barley, two, four, or six-rowed?"—There is no such thing as *four*-rowed barley. When "four-rowed" barley is spoken of, six-rowed is meant. The two-rowed is a later and heavier variety than the six-rowed. All the choice malting varieties of barley in England are two-rowed, and they command a much higher price than the six-rowed kinds Here the six-rowed barley brings about 10 cents a bushel more than the two-rowed—and we think it is the most profitable kind to grow. But much depends on the soil and climate. Six-rowed barley ripens in this State the same time as winter wheat, while two-rowed does not ripen until we are through cutting wheat, and some farmers prefer it on this account. It also yields more straw than the six-rowed.

Irritation of the Tail.—"F. R.," Jamestown, Va. When a horse rubs his tail until the hair is worn off, it would be well to apply kerosene oil to the part, after washing it with warm water and soap. It may be simply irritation of the skin, which this will cure. If worms are the cause, an injection of a pint of salt water should be given daily for a few days, or a pint of linseed oil might be used instead of the salt and water, with an ounce of turpentine mixed with it.

Spaying Fluid.—"J. B. M.," Medina Co., Texas. The advertisement is all we know about this proposed method of spaying sows and cows. The thing looks suspicious, but we cannot give an opinion without knowing more about it.

Basket Items continued on page 113.

The Remington Factories.

The modern town of Ilion—as famed for feats of arms in one sense as the ancient one—is situated in the lovely Mohawk Valley in Herkimer Co., N.Y., upon the N. Y. Central railroad. It owes its existence, if not its origin, to the enterprise of E. Remington and Sons, who have there erected several extensive factories, in which they employ 1500 mechanics, for the manufacture of their celebrated rifles, shot guns, pistols, sewing machines, plows, mowers, tedders, hoes and other agricultural implements. This strange mixture of implements of war and peace bring to mind the ancient prophecy which relates to turning swords into plow shares, etc., for in the Remington factories it is highly probable that the same bar of steel may furnish material for an army rifle, a bayonet, a plow share, a hoe, or a sewing machine shuttle or needle. To enumerate what a visitor may see in this four-acre field of workshop is impossible here, but one thing we cannot fail to remark is, that for perfection of machinery, excellence of material, skill in workmanship and ability in execution, this establishment is

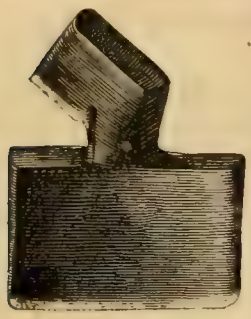

Fig. 1.

Fig. 3.

Fig. 4.—ONION HOE.

unsurpassed. It results that the same material and skill, which enabled this firm to produce the rifle which won the first prize at the late trial between the first marksmen and the best rifle makers in the world, is also brought to bear upon making a sewing machine, a hoe or a plow. To make a first class gun or rifle needs the very best material, the most accurate machinery, and the most consummate skill. It is the highest recommendation that we can give to the Remington sewing machine, or to

Fig. 2.

the various agricultural implements, that they are manufactured of the same quality of material, in the same shops, and by the same kind of artisans as their most accurate rifles and guns. Of their rifles and double barrelled guns, all breech loaders, we need only say that a sportsman cannot resist a desire to possess one of them as soon as he is permitted to handle it, and that it takes but a small sum of money to procure it. For $60 may be purchased double barrelled guns which shoot equally well with $300 imported guns. The *Agriculturist* frequently receives letters from western subscribers who use the Remington rifles for hunting buffalo and antelope, and who speak highly of it. One wrote recently of having shot 28 buffaloes with one of them in one day from one stand.

Fig. 5.—ONE-HORSE STEEL PLOW.

But it is of the sewing machines and farm implements we would speak more particularly. Of the sewing machines, it is enough to say that they are manufactured in the Armory, and the same skill and care is given to them to insure the highest excellence as is given to the arms. The special agricultural implements made at Ilion are hoes, rakes, steel plows, mowers, tedders, excavators, cotton gins, cultivators, and also iron bridges. The manufacture of hoes and rakes is something that few who use these tools know anything about. Few farmers would recognise in the illustrations here given a hoe and a garden rake in their infancy, but this is as they appear after they part company with the parent bar of steel. Fig. 1 is the hoe. This shapeless piece of steel is heated and passed between a pair of rollers, when it appears as seen in fig. 3. Another passage between the rollers brings it nearer to its proper shape, when it is clipped, ground, polished, and then appears the bright attractive implement that is so well known. The onion hoe made at Ilion, fig. 4, is an excellent tool for the garden, weeding both sides of the row at one stroke. The infant rake is seen at fig. 2, as it is clipped from a bar of steel. It is heated in a small furnace, rolled, pressed, hammered, bent, twisted and tortured into all manner of contortions, until it is brought to a shape which pleases the critical eye of the smoky artisan, when it is ground and polished as bright as its brother, the hoe. It is then a steel garden rake needing only its handle to be ready for use. To complete a hoe or rake the services of 40 different workmen are required. The Mohawk Valley plows are all made with "cast cast-steel" shares, and even in the sticky soil of that fertile bottom land scour perfectly. This plow is shown at fig. 5. A one horse steel-plow, No. C 10½, is one of the best and handiest plows we have seen, and is especially adapted for use in market gardens, vineyards, hop gardens, and light work upon farms. The Ilion iron beam clipper is a splendid plow. The American Needle cotton gin, fig. 6, is also made by the Remington Company. This has some improvements upon the ordinary gins, which make it very desirable for planters' use. An earth excavator which digs, lifts and removes earth at less than half the usual cost, is also one of the Remington Company's specialties as are arch and trapezoidal truss iron bridges. With so large an establishment there are abundant facilities for doing all this work, and much more that we have not space to mention, in the very best manner. After a most interesting inspection of the works at Ilion, we can readily understand why the Remington Company's productions have gained so great a popularity; indeed it would be strange were it otherwise, with the ample facilities they possess, and the skill in execution apparent every where about their factories.

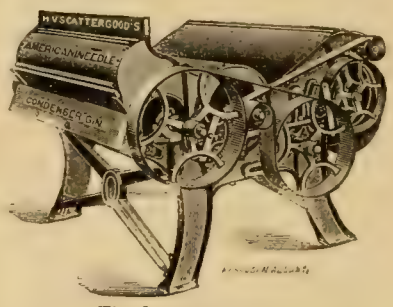

Fig. 6.—COTTON GIN.

REMEDY FOR RATS.—The rat is a cleanly animal, and loves a sleek coat. If coal tar is applied about the entrance to a rat's burrow, so that the animal's coat will be smeared with it, he will leave in disgust. At least the rats of Burlington, Vt., thus express their dislike to a tarry coat, and tarry no longer.

A House Costing $1,500 to $2,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N.Y.

Twenty years' experience in planning and building has taught me that it is not difficult to design either as to Style, Room, or Cost, when the owners have means sufficient to gratify their individual tastes, and no special care is required to save expense. But it is quite another matter to provide plans for the great mass of people, who, through habit or necessity, put everything to the test of economy, and to whom every inch of room, or foot of material, is an important consideration. In designing and projecting such work, theories avail little; practical experience must then be the chief guide.....Conventional modes of living have established a system of household arrangement and economy requiring for every home of even moderate refinement, a house with a Front Hall, a Parlor, a Dining-Room, and a Kitchen on the first floor, and a liberal suite of chambers in a second story. Our plan herewith, though only 20 by 30 feet, provides for all the above. If built on an ordinary 25-feet village lot, it will allow a needed passage-way on one side. In rapidly filling up, crowded localities, four persons owning single lots, making a frontage of 100 feet, can arrange together and build five houses on this plan for about the cost of erecting four detached houses. The fifth house may be rented or sold for the benefit of the four owners.

Fig. 1.—FRONT ELEVATION OF HOUSE.

In such cases, a hall should be finished in the basement with an entrance in front similar to the one shown in the rear in fig. 2.

The **Front Elevation** is made up of simple parts, in a neat arrangement. The Bay Window indicates refinement, and adds largely to the area or room of the Parlor....The **Cellar** walls are of hard brick, are 8 inches thick, 7 feet high, and show at least 3 feet above ground. For health's sake alone, as well as for a better appearance, and for convenience if the basement should ever be desired finished off in rooms, which can be done at any time with little expense, it is best to always place the first floor well up from the ground. In very cold localities frost can be kept out of the basement by banking up in winter, or better by laying the brick walls with an opening up through the center, extending bricks across the opening at frequent intervals to secure firmness. This central air chamber promotes health, warmth, and dryness

in the basement or cellar. One foot of the soil taken from the excavation for the cellar should be used in grading around the house, to secure the

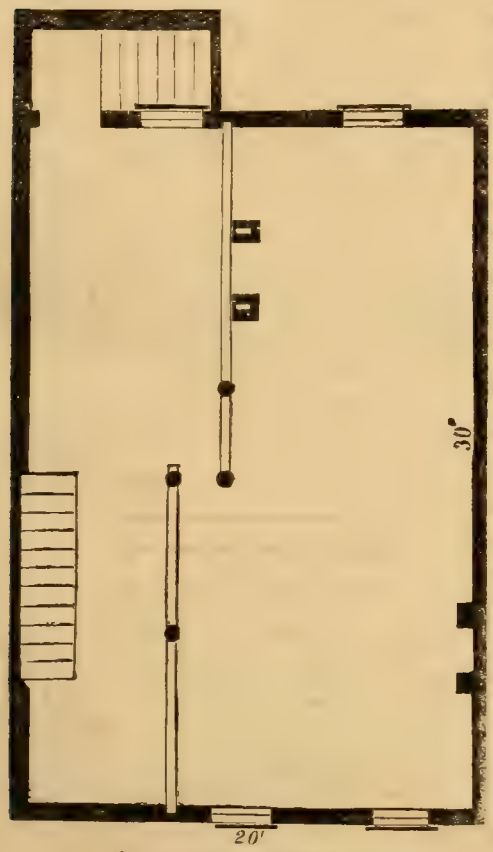

Fig. 2.—PLAN OF CELLAR.

flow of water *away* from it, and still leave the walls 3 feet or more above the ground.

Cost.—The following *Estimates* of cost in detail,

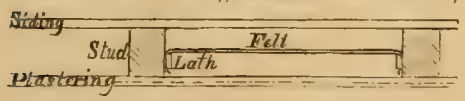

Fig. 6.—SECTION OF OUTSIDE WALL.

will give an idea of the general character of the work. The prices given are for materials in the vicinity of New York. Carpenters wages are reckoned at $3 per day; mason's work, $3.50 per day; and painters, $4 per day:

Excavation, 2½ feet deep, @ 25c. per yard	$ 13.75
12,000 Hard Brick, @ $15, furnished and laid	180.00
28 feet Stone Steps, @ 40c., per foot	11.20
16 feet Stone Sills, @ 30c. per foot	4.80
483 yards Lath and Plastering, @ 40c.	193.20
2000 feet Timber, @ 2½c. per foot	50.00
viz. 2 Sills, 4x7 in. x30 feet. 2 Ties, 4x6 in. x20 feet.	
2 Sills, 4x7 in. x30 feet. 2 Ties, 4x6 in. x30 feet.	
4 Posts, 4x7 in. x20 feet. 2 Girders, 4x8 in. x15 ft.	
2 Plates, 4x6 in. x 30 feet. 2 Stringers, 3x8 in. x20 ft.	
2 Plates, 4x6 in. x 30 feet. 30 Beams, 3x8 in. x20 feet.	
32 Rafters, 3x4 inches x12 feet, @ 20c.	6.40
300 Wall Strips, 2x4 inches x13 feet, @ 16c.	48.00
200 Novelty Siding Boards, 9½ inches, @ 38c.	76.00
160 pounds Tarred Paper, @ 5c	8.00
100 Hemlock Boards, 10 in., @ 20c.	20.00
100 feet Main Cornice, @ 50c.	50.00
1 Bay Window Complete, with Blinds (labor included)	75.00
1½ Stoops Complete, (labor included)	70.00
8 Windows with Blinds, @ $18	144.00
4 Windows with Blinds, @ $8	32.00
8½ Squares of Tin Roofing, @ $9	76.50
100 feet Gutters and Leaders, @ 10c.	10.00
150 Flooring Plank, tongued and grooved, @35c.	52.50
Stairs, (Main and Cellar)	80.00
Base-Boards, Shelving, etc.	30.00
4 Mantels (1 full marble, and 3 marble shelves on Trusses of Plaster)	50.00
21 Doors Complete, (labor included)	200.00
350 lbs. Nails, @ 5c.	17.50
Painting, two coats	80.00
Carpenter's Labor, not included in windows, doors, and porches, about	250.00
Cartage, average one mile	30.00
Allow for extras, Cistern, Pump, Sink, etc. etc.	141.15
Total Cost	$2,000.00

Prices vary in different localities, somewhat, but when higher in some particulars they will generally be lower in others, so that the whole cost will not be greatly different over a considerable extent of country. There are many items that can be cut down in the above estimate, where great economy is needful—our estimate is for a pretty complete, tasteful house. For example, substitute wood for stone steps and sills; omit the blinds, and bay window, use cheaper doors, pine stair-railing and newel instead of walnut, etc. Any good builder can construct a house of this size, number of rooms, and general conveniences, for $1,500 to $1,600, the smaller sum where bricks, lumber, and labor are obtainable at moderate prices. The Bay Window and general external appearance of the front are very desirable. A movable "Dresser" having drawers and shelving with small doors, is indicated for the dining room. This room may be heated by leading a pipe from the kitchen stove to a drum and back into the chimney, or up through the chamber above to warm that somewhat. A "Fireplace heater" in the parlor will warm the chamber above.

An end section of the "Novelty Siding" is shown in fig. 5. This is of 10-inch boards, 1 inch thick, cut as shown in the engraving. The groove in the centre gives it the appearance of narrow clapboards; the lap of about an inch closes tightly, and the thick boards not only add to the warmth, but also to the strength. A house covered with this will vibrate very little in the most windy situations, and be firmer than one covered with thin siding having much heavier timber. Where planing mills are accessible, it is little more expensive than the dressed half-inch boarding, and the appearance is quite as pretty. In this vicinity it is customary to purchase a lot of pretty good quality merchantable pine boards, select the best and clearest of knots for siding, and use the rest for flooring where knots are not objectionable when to be covered with carpeting. The smaller and firm knots in the siding used are readily covered with paint if first primed with a little solution of shellac in alcohol.

EDITORIAL NOTES.

Mr. Reed provides in his estimate for "160 lbs. Tarred Paper." We suppose he intends this to be applied as sheathing upon the studding, before putting on the siding, as this is the usual custom. We suggest the plan devised by MR. JUDD, (cur senior Publisher), and described in the *American Agriculturist* for March, 1871, pages 88 and 89. A section of the wall is shown in fig. 6. The studding 2 x 4, makes a space of 4 inches between the siding and

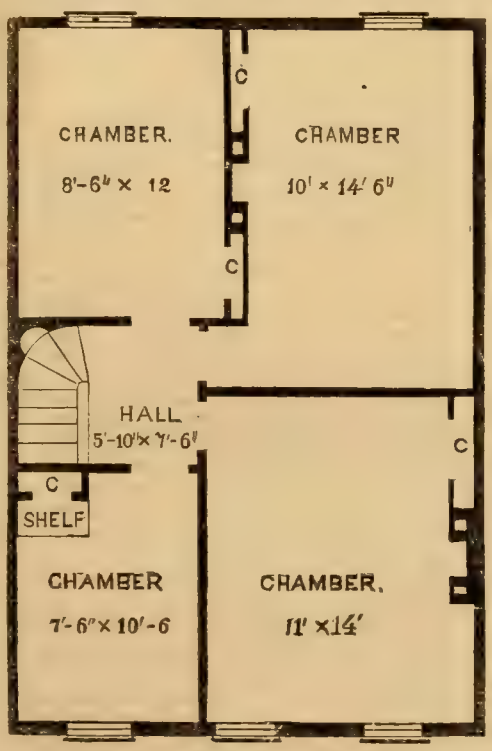

Fig. 4.—PLAN OF SECOND STORY.

plastering. Tarred paper, or what is termed roofing felt, is procured in rolls 32 inches wide. A saw run through the roll cuts it into 16 inch strips. The studs being set 16 inches apart from

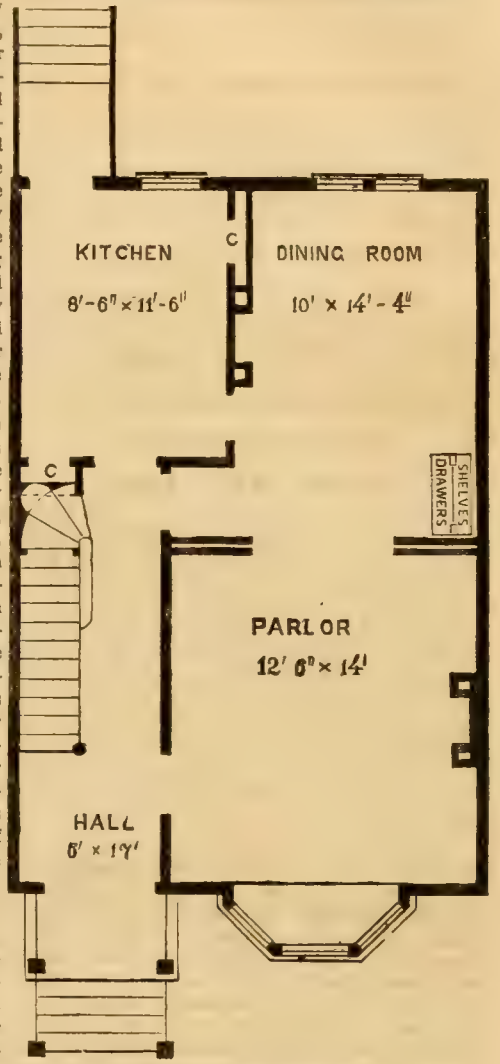

Fig. 3.—PLAN OF FIRST STORY.

center to center leaves the clear space of 14 inches. The strips of felt are turned up an inch on each edge, and these turned edges are held against the studs by lath firmly nailed up and down, so as to hold the sheets midway between the plastering and siding. This leaves *two* air chambers, both good non-conductors of heat. Mice or insects will not eat or go through this material. It is impervious to currents of air, and the whole is as warm as if filled in with brick. The cost is very small, and as will be readily seen, it is much warmer than when the felt is put on directly under the boards, leaving only one air chamber, and that a wide one....In all house-plans we advise putting in all the closets possible; they are always convenient, even a foot square "cubby-hole" in the side of a chimney is a handy place. In planning a house, after making the size as large as one's means will allow, the "better half" should be consulted as to the advisibility of making this or that room a little smaller by cutting off a few inches here and there to enlarge a pantry or closet....We always advise to put in an extra bell or two, and one or more speaking tubes, to connect the upper and lower rooms. The cost is but trifling if they are put in when building. A hundred feet of speaking tube will cost but $2 or $3; the carpenter can insert it behind the lath, running it from one room to another in a few minutes, and it will save many steps, and much calling through the halls, especially when the mother happens to be an invalid and restrained to a chamber. ....In arranging sink, table, dish pantry, etc., with reference to dining-room and kitchen, always plan to save steps. A distance of 10 feet extra, travelled over each way, say 20 times a day, in handling

Fig. 5.—"NOVELTY SIDING."

food and dishes, amounts to 28 miles extra walking every year, all of which may be saved by a slight change in arrangement. These are small matters, but these have much to do in making a "convenient house."

Other House Plans, both cheaper and more costly, will appear in future numbers of this journal, to meet the wants of the many who are always asking for information on this subject. Any one intending to build a house, even if it cost only a few hundred dollars, can hardly fail to get information and hints enough from any of the popular works on architecture to well repay the cost of such a book. There are several plans, with much minute and practical information, in the *American Agriculturist* volumes for 1870 and 1871, and in the numbers for March, 1869, and March 1867. The volumes for 1870 and 1871, are especially desirable. These volumes can be obtained bound, or in numbers unbound, as noted on another page.

Science Made Easy.

Few grown up people had opportunity in their school-days to study chemistry, and if they had, this science has made such great advances within a few years that what we learned only a few years ago, is insufficient for present use. Prof. Atwater is giving some important chapters on the application of Science to Agriculture, and to help to the understanding of those articles, as well as to aid our readers in perusing much that is written in books and papers now-a-days, we condense here a few explanations, which we hope every one will study so well, that they will understand and remember the whole.

An Organic Substance, in general terms, means anything that grows, or is the product of animal or vegetable life. All parts of the human or animal body, as lean meat or muscle, fat, blood, bone, milk, etc., are organic substances. So are wood, leaves, grain, straw, roots, etc. But stones, sand, clay, potash, lime, etc., are *inorganic* substances. If we burn an Organic substance, most of the material passes off in the form of invisible gas, and is diffused through the air. The small part left as ASHES is called *inorganic,* though it was collected in the organic substance during its growth.

All organic substances, whether animal or vegetable, are composed of but *few* elements, and the great bulk of them are made up of only *four* of these—just as buildings of a thousand kinds and forms are made out of wood, brick, sand, lime, nails, and paint, combined in various ways, and in different proportions. Thus, if we separate into its parts, that is *analyze,* a potato, or some hay, or wheat, or a piece of meat, or cheese, or some blood, or oil, or any one of a thousand other organic substances, we shall find them very largely composed of *four* simple elements, which the chemists call Oxygen, Hydrogen, Nitrogen, and Carbon. (A moment's thought would tell any one that plants, grains, and roots, must have the same composition as flesh, because human or brute animals eat them, and change them into flesh.)

Oxygen, in its natural condition, is an invisible *gas,* (or air-like substance,) but it combines with most other substances, to form solids or liquids. It constitutes 8 lbs. of every 9 lbs. of water. It makes up 2 lbs. in every 10 lbs. of air; 4 lbs. in every 11 lbs. of pure dry clay; 8 lbs. in every 15 lbs. of pure white sand; 1 lb. in every 3 lbs. of dry wood. It is the rapid uniting of the oxygen in the air with the carbon and hydrogen of wood or coal, that gives out the heat in the fire. By a slower process of the same kind in the body, the oxygen of the air drawn into the blood through the lungs, unites with the carbon and hydrogen absorbed into the blood from the food in the stomach and intestines, and gives out heat to the body.

Hydrogen.—This, like oxygen, is in its natural state a gas, which also combines with other elements, and forms solids and liquids. Every 9 lbs. of pure water contains just 8 lbs. of oxygen and 1 lb. of hydrogen, and *nothing else.* Hydrogen forms a part of the composition of many other substances. It is, when alone, the lightest substance known. A barrel full, or 32 gallons of water weighs 266⅔ lbs., or 4,264 ounces. If the barrel be filled with air, the air weighs 5¼ ounces; if with oxygen gas, the oxygen weighs 5¾ ounces, while if the barrel were filled with hydrogen, the 32 gallons of hydrogen would weigh only one-third (⅓) of an ounce, or more than twelve thousand times less than water.

Nitrogen is another gas, in its natural state. 100 lbs. of pure air contain 77 lbs. of nitrogen, mixed with 23 lbs. of oxygen; 100 gallons of pure air consists of 79 gallons of nitrogen, and 21 gallons of oxygen. If we change the proportions and unite 14 lbs. of nitrogen with 40 lbs. of oxygen, and add 9 lbs. of water, we have the powerful acid called "*aqua fortis*" (or nitric acid.) Nitrogen is an important substance in the animal and vegetable economy, as it enters into and forms an essential part of nearly all animal and vegetable substances. Without nitrogen we can have no muscle or lean meat, no cheese, no clover, indeed we could have very few of our common articles of food, and with no food containing nitrogen, we should have very little strength.

Carbon.—This is not naturally a gas, but a solid. Pure charcoal is nearly pure carbon, so is the mineral or stone coal we burn. But carbon is not always black. The diamond is pure carbon in a crystaline form. Heat the purest white sugar slowly to drive off the other substances, and you have a mass of black carbon left. White wood burned or heated away from the air, leaves our charcoal or carbon. It was in the white wood before, and only took the black form when we drove off most of the other substances. The so-called black lead of our pencils is graphite, a form of carbon, with a little iron in it. No organic substance is without carbon, and with few exceptions, all contain hydrogen and oxygen also. Now to show how largely the above four elements enter into the things around us, look at the following table:

100 POUNDS OF	CONTAIN ABOUT					
	Carbon,	*Oxygen,*	*Hydrogen,*	*Nitrogen,*	*Water,*	*Other Substances.*
	lbs.	*lbs.*	*lbs.*	*lbs.*	*lbs.*	*lbs.*
Pure Water.	....	88⅞	11⅛	...	....	....
Pure Air.. .	...	23	....	77	....	....
Oats.... ...	43½	31½	5½	1.9	14.1	3.5
Peas.....	40	33½	5½	3½	14	2½
Wheat.....	38½	37	5	3	14½	2
Potatoes....	11	11	1½	½	75	1
Hay.....	38½	32	4½	1½	15½	8
Albumen....	53½	22½	7	15½	....	1½
Starch.....	44½	49½	6	....	...	...
Lean Meat..	12½	5½	1½	3½	75	2
Fat Meat...	71½	10	11	....	7	1
Sand.....	....	53½	.. .	....	. ..	46½
Cook'g Soda	14½	47½	....	....	10½	27½

The above are only a few samples. The sixth column, of "other substances" is chiefly what is found in the ashes after burning the wood, flesh, etc.

Chemistry tells us what things are made up of, and in what proportions; how one thing can be changed into another by changing the elements of which they are composed, or by combining them differently, etc., etc. Feeding the bodies of men or animals, as well as feeding plants, is a chemical process. The chemist analyses, or takes to pieces the food of animals and plants, and the plants themselves; he finds out what they are made of, finds out what kinds of food contain the things most wanted in the bodies of men or animals, what kinds of manures (or plant food) contain the things most wanted in plants, and thus learns what are the best foods to produce muscle or lean flesh to make one strong, what elements of food to produce warmth, or form milk, or butter, or fat (tallow, lard), what manures (or plant food) are best for feeding grain, roots, etc., etc. What we have said is enough to show that chemistry can be of great practical use in agriculture, in feeding animals, etc., though one who has not studied this science can have only a slight idea of its wonderful results and practical use. But chemists are learning to state these results in a way that unlearned people can use the teachings of science in daily practice, to very great advantage.

A few Helpful Explanations: A great number of substances, such as fats (tallow, lard, butter, etc.,) woody fiber, straw, sugar, etc., are mainly made up of Carbon, Hydrogen, and Oxygen described above. These are sometimes, for short, called "*Carbo-Hydrates.*" The principal ones we have to do with in farming, gardening, and feeding animals are:

CARBO-HYDRATES:

Oils,	Butter,	Starch,
Fats,	Woody Fiber (or Cellulose),	Gum.
Tallow,	Sugar,	

The above substances contain little or no nitrogen in their pure state, and they are in Agricultural Chemistry, often called either *Carbo-Hydrates,* or non-nitrogenous substances.

There is another class in which Nitrogen is an essential part, such as lean flesh, or muscle, curd of milk, albumen or white of egg, etc. As *Albumen* is well known, and is found in many other things as well as in the white of eggs, those substances which contain nitrogen largely are called Albuminoids. Here is a list of a few of the

ALBUMINOIDS:

White of Eggs, or Albumen;	Gelatine, or Glue;
Curd of Milk, or Caseine;	Gluten of Grain, or
Muscle, or Lean Meat;	"Wheat Gum;"
	Vegetable Fibrine.

Ogden Farm Papers.—No. 61.

BY GEORGE E. WARING, JR.,

I have received lately an unusually large number of letters asking for information about underdraining. In most cases the writers offer to pay whatever charge I may make for the service asked. In hardly one of these letters is there a point raised that is not fully discussed in my book "Draining for Profit, and Draining for Health," published by the Orange Judd Company, and sold for less than I should be obliged to charge for a single letter, if I made any charge at all, which I rarely do. The increasing interest in the subject, and the apparently widespread ignorance as to the existence of the book in question, must be my excuse for calling attention to it in this way.

While the general principles, and most of the details of the practice of underdraining, are laid down in the book, there have been some slight improvements made since it was published, and I realize now, as I did not when I wrote it, how extensively draining operations are carried on by men so situated that they cannot procure draining tiles at a reasonable cost. This makes it worth while to give some general consideration to the subject here. The most striking, and, I think, the most valuable suggestion that has been made in connection with draining during the past few years, comes from Mr. Wilkinson, of Baltimore, who recommends that where tiles cannot be procured, the conduit be made with gravel. The ditch is to be cut very narrow, especially at the bottom, regularly graded, as if for tiles, and then filled to a depth of from six to ten inches with gravel, covered with shavings or leaves, but only a very little of these, just enough to prevent the earth, during the filling, from rattling down into the gravel. There might be some danger, if the quantity used were large, that on its decomposition, it would work down into the gravel and cause obstructions. After the covering is put on the gravel, the ditch is to be filled, the earth being well packed, as is recommended in tile draining. The gravel may be coarse or fine, but, whatever its quality, it would be better that the finest and the coarsest parts should be screened out, so that that which is used may be of uniform coarseness, and more porous than if all were mixed together. I am disposed to attach very great importance to this method of draining; where gravel can be cheaply obtained, it must be very economical; as there can never be a very rapid current of water passing through the conduit to abrade the sides of the ditch, there will be little danger of silting up; and, as the gravel will lie snugly together, there is no danger of its misplacement, or of the injurious entrance of vermin. The drain would be everywhere open to receive the infiltration of water, and for all lateral drains the arrangement seems very nearly perfect. Doubtless a channel of gravel av-

eraging four inches wide, and six inches deep, would furnish an ample conduit for a drain 1000 ft. long, or for the draining of an acre of land. For the outlet of larger areas, or for laterals aggregating more than 1000 feet, main drains of somewhat larger size, and furnished with broken stones, small cobbles, or better still, with the coarser screenings of the gravel, will ordinarily be found sufficient. It is only when a very large amount of water is to be removed, that any further provision will be necessary. In such a case, either an open ditch, or a drain made of thoroughly well-laid stonework, would be the best where tiles are not available.

One of my questioners says that he can get two-inch tiles at $12 per 1000 ft., and asks whether he should use these, or some cheaper material. The tiles would be the best, and cheaper than anything else but gravel—cheaper even than that unless it is very accessible. He has a fall of two inches to the rod; this is more than ample.

He also wants to carry the slops and waste water from his kitchen to a barnyard seven rods distant; this should be done by the use of pipes not less than four inches in diameter, and well cemented at the joints. There should on the score of health be no opportunity for such leakage as would cause the soil to be saturated with foul water. He further says: "The farm has two ridges and two hollows, through which, in times of freshet, the water runs quite strong. They seldom carry water at other times. Can I get this water underground, so that it will not flood the lower land? It soon settles, but it makes the land work heavy."—In such a case the use of underground drains is not to be recommended. Any occasional rush of surface water had better be carried off through light-sodded water-furrows at the surface; these furrows may be quite shallow and wide, so that a mowing machine will pass through them without difficulty. An unused underdrain, that is, a drain which carries water only a few days in the year, is apt to be a nuisance, and is quite sure to be the resort of mice and other vermin.

I am also asked how steep the sides of a ditch may be made to prevent filling up. This depends very much on the character of the soil, the amount of water running, and the liability to injury by frost. In even a tolerably heavy soil it is not safe to make the slope less than 1½ horizontal to 1 perpendicular; that is, a ditch 3 feet deep, and 1 foot wide at the bottom, should be 10 feet wide at the top; if less than this, it will be quite likely to be frequently obstructed by the caving in of the sides, and will require frequent cleaning out. If the water in the ditch has a rapid flow, it is pretty sure to cut away the banks unless these are protected with stones or planks.

The good opinion hitherto expressed in these papers of the dairy of the Messrs. Boies, at Marengo, Ill., is confirmed by our best butter merchant here. They recently sent me a small package of their butter, which we pronounced to be the best salted butter we had ever seen in winter. At our suggestion the merchant sent for a large package for his own trade, and he considers it unquestionably the best tub butter he has ever had. It finds a ready sale at one-third more than the regular market price.

Now if this sort of thing can be done at Marengo, it may be done at a thousand other places in the West. We receive constant complaints that butter has to be sold at from 15 to 25 cents per pound, because markets where good butter is sought are so distant, but here are men whose markets are a third the continent's width away, and who receive from 40 to 45 cents net at their dairy. The moral of all this is, that people who pay good prices want good articles, and that those who wish to benefit by the high prices they pay, have got to supply the demand in the matter of quality. Nobody at the East, nor at the West either, for that matter, pays high prices from motives of generosity, nor out of sympathy for unfortunate or unsuccessful people; they want good supplies, and for these they are willing to pay a price that will leave a round profit after all the cost of transportation has been paid; and the only way to overcome the difficulty of costly transportation, is to produce things which can be marketed at a relatively low cost for freight. One bushel of corn is as good as another, and there is no great difference in price between beef carcasses of good quality, but good butter and cheese, and well-washed wool, and whatever bears a high price—relatively higher the better the quality—will practically annihilate the distance between the West and the East.

As good a formula as could be given for practical farming at the West, would be *to convert the cheap soil productions of that favored region, into commodities of little bulk and high value, which are in great demand at the East.* Old-fashioned farming can not be carried on at great profit with a thousand miles between the field and the market.

The degree to which Jerseys are working their way among butter-dairymen, is very well indicated by the constantly increasing demand for bull calves. Seven or eight years ago it was considered by a Jersey breeder almost a calamity to have a bull calf born, and it was usually either knocked on the head, or sold at a tender age to the butcher. Now, so active is the demand in every direction, that bulls will probably soon be considered more valuable than heifers. I asked Mr. Crozier, last autumn, a rather high price for a very fine heifer calf, from one of my best cows. He declined to take her, but said that if it had been a bull, he would not have hesitated. Instead of killing or castrating my bull calves, as I did when I began breeding, I now buy all the really good animals I can find within my reach, from good milking strains, and have no difficulty in selling them at fair prices. In one week in January, Mr. Charles Sharpless, of Philadelphia, who owns some remarkable butter-makers, (Jerseys), sold two bull calves only a few weeks old; one to Atherton T. Brown, of Boston, for $300, and one to D. F. Appleton, of Ipswich, Mass., for $500.

The increasing popularity of Jerseys, is due very largely, no doubt, to the influence of the American Jersey Cattle Club, which has established a perfectly reliable standard of pedigrees, and which has been at some pains to extend a knowledge of the characteristics of the breed, but which has avoided an evil complained of with reference to some other organizations, by devoting itself strictly to the general interests of the breed, without in any way working for the particular advantage of its own members, either individually or as a class. Their work has been accompanied with very little flourish of trumpets, but the history of Jersey cattle in America will show, at the end of twenty years, the great value of quiet and well organized effort. Their example might be followed with advantage, not only by breeders of other races of cattle, but by all associations who have for their purpose the furtherance of any agricultural interest, by the avoidance of cheats, and by the spread of information.

Science Applied to Farming.—III.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

How Science is Saving Money and Increasing the Profits of Farming—Practical Directions for Feeding Stock Economically.

In this and succeeding articles we propose to translate for the use of American farmers, some of the results of European experience and experiments upon Manuring and Feeding. We begin with those upon feeding. We have stated that many thousands of German farmers carry a Pocket Calendar, containing, besides other valuable information, a large number of fodder tables. These show in what proportions various food materials should be mixed and fed out to different animals, in order to avoid waste and obtain the greatest amount of flesh, fat, milk, or work, from a given quantity of food. As already remarked, these are no hap-hazard statements, but are the condensed results of the best experience, not merely of ordinary practice, but especially from a great number of feeding trials performed at the Experiment Stations by the ablest scientific men, who have all needful appliances for obtaining definitely the knowledge they seek.

First, however, let us explain a few scientific terms.* Some ingredients of food, and some foods rich in these ingredients, are especially good for fattening animals; others are better adapted to give strength for work, or to supply heat to the body in cold weather. Some promote a large flow of milk; others produce a milk richer in cream or curd.

If a piece of wood, a wisp of hay, or a turnip, is kept some time in a hot oven, a part of it, the water, will pass off. If the dried part be burned, still another portion, called organic substance, will be carried away as invisible gas or smoke, and there will be left only the ashes or mineral matter. Now this organic substance contains the ingredients, which, with water, make the flesh and fat, and milk, and which produce heat and strength. What are these ingredients?

Albumen, found pure in the white of an egg, is a representative of several kinds of substances, which are to be noted as containing nitrogen*, and we apply the general name, **Albuminoids,** to these *nitrogenous*, or nitrogen-containing substances. The "wheat gum," which boys chew, is mainly an albuminoid. In chewing the wheat, the starch, sugar, etc., are removed in the saliva, and the tougher, nitrogenous gluten remains. The Albuminoids are found in the bodies of all animals and plants. Muscle or lean meat, caseine (curd) of milk, fibrine of blood, albumen and fibrine of plants, are nitrogenous substances, or albuminoids. Clover, beans, bran, oil-cake, contain much, while potatoes, straw, cornstalks, contain little of albuminoids.

Again, there are other animal and vegetable materials that contain little or no nitrogen, but only carbon, oxygen, and hydrogen.* These are therefore called by the general name of **Carbohydrates,** or non-nitrogenous substances. Starch, sugar, woody fiber, oil, tallow, fat meat, and butter, are non-nitrogenous. Potatoes, sugar-beets, straw and chaff, contain much of carbo-hydrates, and little of albuminoids.

Does it not occur to the most unscientific reader, that to produce the most albuminoids, as muscle, caseine in cheese, etc., we should select food rich in albuminoids, and that to produce the most fat or butter, or warmth, we should choose the food that contains the most material to yield these products? And further, is it not obvious that the skillful chemist can, by examining the composition of different foods, tell us something as to what these foddering materials are? But we shall learn as the result of the most careful and practical tests, that there are certain combinations of these different materials, the Albuminoids and the Carbohydrates, that secure the most profitable results of feeding.

German, English, French, and some American Chemists have examined almost all known food materials, to ascertain just what they are composed of. Here is, for example, what they find

Table 1. *In 100 lbs. of Wheat Grain:*

Water which can be dried out at 212°	$13\frac{1}{2}$ lbs.
Albuminoids, containing nitrogen	$13\frac{1}{5}$ lbs.
Carbo-hydrates, (*a*) containing no nitrogen	$71\frac{1}{5}$ lbs.
Mineral matter (ashes)	$2\frac{1}{10}$ lbs.
	100 lbs.

a This is made up of fat (classed for convenience with the carbo-hydrates) $1\frac{3}{5}$ lbs.; starch $59\frac{1}{2}$ lbs.; sugar $2\frac{2}{5}$ lbs.; gum, etc., $4\frac{7}{10}$ lbs.; fiber, (cellulose,) 3 lbs.

In the Table below, we show the composition of several fodder materials. They are taken in their natural conditions, and the *first* column of figures tells how many pounds of water are contained in 100 lbs. The *third* column tells how much organic matter there is, viz.: that which would burn away. The *second* column tells how many pounds of ashes would be left. Thus we have in 100 lbs. of medium hay $14\frac{2}{10}$ lbs. of water, $79\frac{8}{10}$ lbs. of organic substances, and $6\frac{2}{10}$ lbs. of ashes. There is in this organic part of $79\frac{1}{2}$ lbs., about 30 lbs. of woody fiber. The other $49\frac{1}{2}$ lbs. are composed of $8\frac{2}{10}$ lbs. of *Albuminoids* or nitrogenous substances given in the *fourth* column, and $41\frac{3}{10}$ lbs. of *Carbo-Hydrates*

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* See also "Science Made Easy," in another column. Ed.

or non-nitrogenous substances given in the *fifth* column. The *sixth* column gives the relative proportions of the Albuminoids to the Carbo-hydrates, which in the meadow hay is about 1 to 5, (or 8.2 to 41.3). These amounts and proportions should be well understood, for they are important in combining these foddering materials to get the best results in feeding for a particular purpose:

Table 2.

KINDS OF FODDER.

100 Pounds Contain.

	Water.	Ashes.	Organic Matter.	The organic matter cont'ins as nutritive Ingredients: Albuminoids.	Carbo-hydrates	Ratio of Albuminoids to Carbo-hydrates.
	lbs.	lbs.	lbs.	lbs.	lbs.	
(a)—Hay.						
Meadow Hay, Common....	14.3	6.2	79.5	8.2	41.3	1 to 5.
Aftermath of same.....	14.3	6.5	79.2	9.5	45.7	1 to 4.81
Red Clover, cut in bloom..	16.7	6.2	77.1	18.4	29.9	1 to 2.23
Red Clover, cut ripe.....	16.7	5.6	77.7	9.4	20.3	1 to 2.16
White Clover, cut in bloom	16.7	8.5	77.8	14.9	34.3	1 to 2.30
Timothy Hay.....	14.3	4.5	81.2	9.7	48.8	1 to 5.
Average of all Grasses....	14.3	5.8	79.9	9.5	41.7	1 to 4.40
(b)—Straw.						
Winter Wheat Straw.....	14.3	5.5	80.2	2.0	30.2	1 to 15.10
Winter Rye Straw.....	14.3	3.2	82.5	1.5	27.0	1 to 18.
Winter Barley Straw.....	14.3	5.5	80.2	2.0	29.8	1 to 14.90
Summer Barley Straw.....	14.3	7.0	78.7	3.0	32.7	1 to 10.90
Oat Straw.....	14.3	5.0	80.7	2.0	38.2	1 to 15.28
(c)—Green Fodder.						
Grass before bloom.....	75.0	2.1	22.9	3.0	12.9	1 to 4.30
Grass after bloom.....	69.0	2.0	29.0	2.5	15.0	1 to 6.
Red Clover in full bloom..	78.0	1.7	20.3	3.7	8.6	1 to 2.23
Corn Stalks, end of Aug...	84.3	1.1	14.6	0.9	8.7	1 to 9.67
Cabbages.....	89.0	1.2	9.8	1.5	6.3	1 to 4.20
Beet Leaves.....	90.5	1.8	7.7	1.9	4.5	1 to 2.37
(d)—Roots and Tubers.						
Potatoes.....	75.0	0.9	24.0	2.0	21.0	1 to 10.50
Sugar Beets.....	81.5	0.8	17.7	1.0	15.4	1 to 15.40
Carrots.....	85.0	1.0	14.0	1.5	10.8	1 to 7.13
Rutabagas.....	87.0	1.0	12.0	1.6	9.3	1 to 5.81
Turnips.....	92.0	0.8	7.2	1.1	5.1	1 to 4.61
Pumpkins.....	92.5	1.0	6.5	1.8	4.2	1 to 3.25
(e)—Grains and Seeds.						
Winter Wheat.....	14.4	2.0	83.1	13.0	67.6	1 to 5.20
Wheat Flour.....	12.6	0.7	86.7	11.8	74.2	1 to 6.28
Winter Rye.....	14.3	2.0	83.7	11.0	69.2	1 to 6.29
Winter Barley.....	14.3	2.3	83.4	9.0	65.9	1 to 7.32
Summer Barley.....	14.3	2.6	83.1	9.5	66.6	1 to 7.
Oats.....	14.3	3.0	82.7	12.0	60.4	1 to 5.
Indian Corn.....	14.4	2.1	83.5	10.0	68.0	1 to 6.80
Buckwheat.....	14.0	2.4	83.6	9.0	59.6	1 to 6.62
Vetches.....	14.3	2.3	83.4	27.5	49.2	1 to 1.79
Field Beans.....	14.5	3.5	82.0	25.5	45.0	1 to 1.76
Peas.....	14.3	2.5	83.2	22.4	51.6	1 to 2.30
Flax Seed.....	12.3	5.0	82.7	20.5	55.0	1 to 2.68
Rape Seed.....	11.0	3.9	85.1	19.4	55.4	1 to 2.85
Hemp Seed.....	12.2	4.2	83.6	16.3	55.2	1 to 3.30
Cotton Seed.....	8.7	7.8	83.5	22.8	44.7	1 to 1.96
(f)—Refuse.						
Malt Sprouts.....	8.0	6.8	85.2	23.0	44.7	1 to 1.94
Wheat Bran.....	13.1	5.1	81.8	14.0	50.0	1 to 3.57
Rye Bran.....	12.5	4.5	83.0	14.5	53.5	1 to 3.69
Rape Cake.....	15.0	7.4	76.6	28.3	33.5	1 to 1.18
Linseed Cake.....	11.5	7.9	80.6	28.3	41.3	1 to 1.46
Cotton-seed Cake.....	11.5	6.3	82.2	24.6	36.8	1 to 1.20

The first and second columns of figures show how much water and ash are contained in each material. 100 lbs. of turnips, for example, would yield about 92 lbs. of water, and 13 ounces of ashes, and only a little over 7 lbs. of organic matter. Though the ash has its use in the food of animals, and especially as manure, it will suffice here to take account only of the organic matter in the third column, and more especially its ingredients in the fourth and fifth columns, and the ratio of these in the sixth column.

Let the reader fix well in mind the fact, that the *albuminoids*, those substances which contain nitrogen, supply certain needs of the animal body, for which the carbo-hydrates, that are without nitrogen, do not suffice; as, for instance, the formation of muscle, and the curd of milk. The organs of digestion and nutrition of an ox or a cow, can not make muscle or fat without the proper ingredients in the food out of which to make them. Experience indicates in a general way what kinds of food are best for different purposes. But just here is where science is of great aid to practice. The wonderfully delicate weighing balances of the chemist and his accurate analyses, tell us exactly *what* elements every part of the animal body is made of, and exactly what is found in every variety of material grown and used for animal food. At the Experiment Stations the workers take a lot of animals and feed them with the utmost care, watching every development, analyzing and weighing all the food, the excrement, and even the air they breathe to learn what escapes in that. They combine the different varieties of food in a great many ways, and with careful hands and skillful eyes, note the precise effects with marvellous accuracy. They have learned, for example, that a working ox, or a milk-giving cow, needs not only more food, but also food containing a larger proportion of albuminoids than an ox *at rest*, or a dry cow. They have learned, for example, how much of different food materials an ox or a cow will digest, that is to say, how much is really nutritious and valuable as food, and how much is left to be useful only as manure. They have found, and this is a very important point, that when the albuminoids and carbo-hydrates are not mixed in the proper proportions in the fodder, a part of the really digestible material will not be digested, but wasted. And they have learned how oil-cake, malt-sprouts, and many other waste products should be mixed in the food, so as to secure the most complete digestion; and even how cattle may be made to obtain a large amount of nutriment from straw, chaff, and like materials, of which many American farmers make little account as fodder. Thus these careful experiments show how different kinds of food may be combined to secure the greatest *profit* from feeding. And the German farmers who unite these results with their own best experience, find a great practical saving therein—a saving in comparison with which the cost of the Experiment Stations is very slight. Science thus adds to the profits, and hence to the comfort, of farmers there, and will do so for us in proportion as we secure its aid.*

The element, *Nitrogen*, which is so important in albuminoids of food, as well as in guano and other fertilizers, though so abundant in the air, seems, so to speak, to be chary of being caught in plants and soils, and it is the most costly element of foods, as well as of manures. Further, German experiments show that the albuminoids can do the work of the carbo-hydrates in the nutrition of the animal, to a greater extent than the carbo-hydrates can that of the albuminoids. Hence, the albuminoids are the most valuable ingredients of food materials. The table above shows that 100 lbs. of medium meadow hay, contains about 8 lbs. of albuminoids; 100 lbs of wheat straw contains only 2 lbs., and 100 lbs. of turnips less than 1 lb., and so on. The table shows that in common hay the ratio of albuminoids to carbo-hydrates, is about 1 to 5. Experience and experiment agree that hay is a good fodder, and this in a proper proportion for ordinary feeding. But milch cows do rather better on clover, in which the ratio is 1 to 2½. So also a food richer in nitrogen is better adapted to oxen at hard work, and to fattening cattle. On the contrary, a dry cow or an ox at rest, would require only about 1 lb. of albuminoids, to 8 of carbo-hydrates. Straw of oats, wheat, or rye, cut when it is still tinged with green, and the "kernel is in the milk," contains these in the ratio of about 1 to from 13 to 18.

Accurate experiments many times repeated, have shown that oxen, or cows, or sheep, will digest and appropriate nearly as much from a pound of straw, as from a pound of good timothy or clover hay. But this digested material from the straw contains only very little albuminoids, and further, it will not be all digested unless some nitrogenous material is mixed with the straw. With a food mixture of straw and enough nitrogenous bean meal, to give a ratio of 1 to 8, oxen at rest in the stable are found to digest about one-half of the material of the straw, and all the meal. The chemistry of these facts, which are of incalculable value to farmers, we will explain in succeeding articles, and hasten now to give some practical directions for applying them.

The Science of "*Rational Foddering*" is indeed yet in its infancy, but rapid progress is making, and we want a score of Experiment Stations in this country to push on investigations, so that the present generation of farmers may have the full benefit of the developments. But we have some help already. Dr. Wolff, director of the Experiment Station at Hohenheim, in Germany, who has conducted a great many careful feeding experiments, and is, perhaps, the first European authority in these matters, gives from his own and hundreds of other investigations, coupled with the best results of farm experience, the following proportions of food ingredients as appropriate for daily rations for the animals and purposes specified. *These rations are calculated for each* 1,000 *pounds of live weight of the animals.* The crude fiber (in straw and hay) are useful in giving proper bulk or "ballast" to the food, and are to some extent digested also.

Table 3.

For Daily Feed or Ration for each 1000 lbs. Live Weight of the following Animals.

	Organic Matter.	This Organic matter consists of: Crude Fiber.	Albuminoids.	Carbo-hydrates.	Fat or Oil.	Ratio of Albuminoids to Carbo-hydrates.
	lbs.	lbs.	lbs.	lbs.	lbs.	
1. Oxen at rest in stall.....	14.1	6	.9	7.2	0.	1 to 8.
2. Oxen at moderate work...	21.	9	1.85	10.15	0.	1 to 5.5
3. Oxen at severe work.....	25.	10	2.8	12.4	0.	1 to 4.4
4. Milch Cows in winter.....	21.	9	2.5	12.5	0.	1 to 5.
5. Richer Ration for same...	25.	10	3.	12.	0.	1 to 4.
6. For Fattening Cattle.....	23½	6	3.2	14.3	1.2	1 to 4.5
7. For Growing Sheep.....	24.	10.3	1.96	11.8	0.	1 to 6.
8. For Fattening Sheep.....	23.	5	3.6	14.1	1.	1 to 4.

It will be seen that an ox at rest needs only 1 lb. albuminoids to 8 lbs. of carbo-hydrates; a working ox or milch cow requires a double quantity of albuminoids, for producing muscular work, or milk.

Now we are prepared to understand something of the reasons for the following tables, in which are given a few of the scores of combinations of food which German farmers constantly have by them, to use in judging how they shall best use, combine, and feed, such kinds of food as they have on hand or can best buy. We repeat that these tables are the results of many hundreds of the most extended and careful trials at the Experiment Stations, where every possible aid of chemistry and practical test, have been brought into requisition:

Table 4.—Giving a Daily Ration or Feed for the Animals named.

I.—For full grown Oxen not at Work.

A	or B	or C
1½ lbs. Clover Hay	3 lbs. Clover Hay	5 lbs. Meadow Hay
13 lbs. Barley Straw	13 lbs. Wheat Straw	7 lbs. Oat Straw
25 lbs. Beets	20 lbs. Turnips	5 lbs. Wheat Chaff
½ lb. Rape Cake		5 lbs. Potatoes

II.—For full grown Oxen at moderate Work.

D	or E	or F
12 lbs. Meadow Hay	9 lbs. Clover Hay	10 lbs. Clover Hay
13 lbs. Oat Straw	10 lbs. Rye Straw	14 lbs. Oat Straw
2 lbs. Oil Cake	22 lbs. Potatoes	20 lbs. Beets

III.—For full grown Oxen at severe Work.

G	or H	or I
12 lbs. Meadow Hay	11 lbs. Meadow Hay	15 lbs. Meadow Hay
12 lbs. Barley Straw	7 lbs. Clover Hay	8 lbs. Clover Hay
4 lbs. Clover Hay	9 lbs. Oat Straw	6 lbs. Wheat Straw
4 lbs. Bean Meal	2 lbs. Oil Cake	3 lbs. Wheat Bran

IV.—For Cows giving Milk.

K	or L	or M
12 lbs. Meadow Hay	10 lbs. Meadow Hay	10 lbs. Clover Hay
11 lbs Barley Straw	12 lbs. Wheat Straw	10 lbs. Barley Straw
15 lbs. Potatoes	50 lbs. Turnips.	23 lbs. Potatoes
3 lbs. Oil Cake	3 lbs. Malt Sprouts	3 lbs. Wheat Bran

or N	or O	or P
6 lbs. Timothy Hay	50 lbs. Green Clover	36 lbs. Green Clover
80 lbs. Green Clover	60 lbs. Green Corn Stalks	80 lbs. Green Corn Stalks
5 lbs. Wheat Straw	8 lbs. Barley Straw	7 lbs. Rye Straw

A Richer Fodder for Same.

Q	or R	or S
10 lbs. Clover Hay	12 lbs. Clover Hay	10 lbs. Lucerne Hay
10 lbs Oat Straw	10 lbs. Barley Straw	9 lbs. Oat Straw
5 lbs. Barley Chaff	5 lbs. Wheat Chaff	5 lbs. Timothy Hay
30 lbs. Turnips	20 lbs. Turnips	13 lbs. Turnips
3 lbs. Oil Cake	2 lbs. Bean Meal	5 lbs. Malt Sprouts

Note that the above tables are not for following exactly, but as indicating what *proportions* will give the best and most profitable results. The three tables A, B, C, each give about the same combination and amounts of albuminoids, carbo-hydrates, and fiber, and so of the other separate tables under each class of animals. Most of the substances named are obtainable by American farmers. In using the above tables, barley, wheat, rye, and oat straw can be substituted for each other. Either turnips or beets can be used, and either rape-cake, linseed-cake, or cotton-seed-cake as oil-cake or meal. The Germans cultivate largely linseed, vetches, etc., and their tables usually include these. We propose to give a much larger series of tables hereafter, fifty to a hundred of them perhaps, with such explanations as will make them useful to our farmers. But we ought to have Experiment Stations actively at work in several of our States, to produce results *exactly* adapted to American farming.

[* If our farmers feed only $500,000,000 worth of grain, grass, hay, and other forage in a year, and science can teach them to save but 2 per cent of it by teaching how to feed most economically, there is a saving of $10,000,000 a year, *and there is no doubt that this can be done*—an average saving of over a quarter of a million dollars to each State. As soon as people understand this fact, the State Board of Agriculture of Connecticut, or any other State, will not have to work a year or two or more to get an appropriation of a paltry five or ten thousand dollars to set up an Experiment Station to make the needed experiments to show farmers how to make this saving, or increase their profit by so much.—Eds.]

Breton Cattle.

There is no race that more clearly shows the effects of local surroundings upon breeding, than do the Brittany cattle. Brittany is a province of western France, a region of granite hills, and bleak moors, covered with heather and broom, amongst which here and there are narrow tracts of poor arable and pasture land. The forage upon which the Breton cattle are supported, is mainly bog hay, with occasional rations of pounded gorse or furze, as a treat or appetizer, and the pickings over scrubby herbage of the hills and moors. The climate is bleak, foggy, and ungenial, being subjected to all the adverse influences arising from its exposure upon three sides to the gales of the Atlantic ocean. The Breton cattle are consequently of diminutive size, but when removed to other localities, in which their treatment is more generous, they rapidly increase in size, and instead of a slight attenuated frame, they exhibit a deep carcass, which is shapely rounded, while they retain the fine limbs and deer like heads of their originals. The bull shown in the illustration, for which we are indebted to the London Field, is owned by Mr. J. C. W. Douglas, of Finisterre, France, and is three years and a half old. The portrait is a good representation of an animal of this breed as it appears under favorable conditions. The color is black and white, the body long and fine, the milking properties are well developed, the horns fine, white at the base, and black at the points, elegantly curved and somewhat elevated in position. When crossed with the Shorthorn, the produce is so much like the Dutch cattle, that this breed has been supposed to be one of the sources from whence the Dutch race has been derived. The persistence with which the black and white color, and general features of the Bretons are reproduced in all their crosses, show them to be a well established and pure breed. Upon the poor feed they usually receive, the cows yield on the average 12 quarts of milk per day, and 3¼ lbs. of butter per week; in extra cases 15 quarts of milk per day, and 7 lbs. of butter per week is produced. Mr. Douglas writes to the Field as follows:

"Having had personally pretty extensive experience in milk stock of all sorts, during some thirty odd years of continual residence in Brittany, I hold the opinion that there does not exist anywhere a breed of dairy cattle, naturally so well up to the mark of what a milk cow should be, and so worthy of attention and improvement by the selection of good typical males and females from among themselves, and of course, by a system of better feeding. My accompanying sketch gives a good idea of a handsome bull of the breed, three years and a half old. I bought him young, and took several prizes with him. His father passed into the hands of Messrs. Robertson, of Eaton Farm, Cobham, Surry. The peasant, at the other end of the halter, is a good specimen of a sturdy Breton farmer."

The interest in the picture is increased by the introduction of a Brittany peasant in his odd, but rather picturesque costume. Those pantaloons, or breeches, would puzzle a fashionable tailor. But with these simple people fashions are not known, and the peasant dresses precisely as his ancestors did for many generations back, and as his children and grandchildren will for generations to come.

A BRETON BULL.—Owned by J. C. W. Douglas, Finisterre, France.

The Poultry Interest.

One of the best indications of the stronghold which rural pursuits have upon our people, is the increasing interest in fine poultry. It can no longer be called the "hen fever," for it is peculiar to no section, and the interest has already lasted several years, and seems to be increasing rather than diminishing. It has become a specialty, supporting numerous journals, and holding annual exhibitions, far more numerous than those of horticulture. Besides all that is said upon poultry in our numerous agricultural papers, we have about a dozen journals devoted exclusively to poultry and pet stock. The oldest of these journals, The Poultry Bulletin, is in its fifth year, and the Poultry World in its fourth, both, as well as others elsewhere, we understand, well supported, and gaining in reputation. The poultry shows, which are mostly held in the winter on account of the most perfect plumage and heaviest weight of the fowls, are scenes of the liveliest competition between the prominent breeders. They draw out the best birds from the choicest pens, and multitudes from city and country

throng the halls during four days in the week usually devoted to the show. The winning birds in the popular breeds command fabulous prices; from fifty to a hundred dollars being not infrequently paid for a single bird, that has only a single point of excellence, and three ounces of flesh more than his competitor. These exhibitions have a very great influence upon the breeding of the finer varieties of fowls, and the effect is visible in the egg and poultry markets. Chickens that are exposed for sale are at least a third larger than formerly, and the average weight of flocks of turkeys dressed at Thanksgiving and Christmas is steadily gaining. Fourteen pounds weight is as common for lots of fifty to a hundred as ten pounds was twenty years ago. But the benefit is by no means confined to the markets and the farmer's purse. There is something refining in the cultivation of the finer breeds of poultry and turning out finished products. The man who has raised a forty-pound bronze gobler, and seen his plumage in its glory, will not be satisfied with inferior stock in his herd or his fold. There is a feast for the eyes in the rich coloring and beautiful forms of our domestic fowls, and their presence about the farm-yard, or upon the lawn, cultivates the esthetic sense, and ennobles the farmer's art. Children grow up with a greater fondness for rural pursuits and for their homes. This is one of the things to redeem labor from its coarseness and drudgery, and to make our boys and girls content with farm life.

Walks and Talks on the Farm.—No. 135.

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I have frequently recommended the practice of letting pigs have the run of a good clover-pasture in summer. Mr. J. C. C., of Indiana, writes that his land would produce a great crop of clover, but he would like to know if it would pay to raise clover for hogs, when he could raise corn for 10 cents per bushel. In reply, I asked if this could be done. Mr. C. has been kind enough to send the following statement. "In the first place," he writes, "I have very good soil, and it is pretty new. As to rotation, I plow down just after harvest a clover sod. It is afterward cultivated and pulverized, and then about the first week in September sown to wheat. After the wheat is off, the land is allowed to lie until the next spring, when it is plowed for corn as early as possible. Then I leave it until immediately before planting. It is then harrowed, and cross-harrowed, and marked off four feet each way, and two or three inches deep, with a common single shovel-plow, with a cutter slanting, so that the lower end is nearer the shovel than the upper end. Then I have a small boy or girl drop four grains in each cross or hill. A man follows and covers with a hoe. Last spring five droppers, and five to cover, put in 13 acres in one day, costing me $7.50—men $1 per day, and droppers 50 cents, not counting the board. After it is planted, I am not too much in a hurry about tending it. When the plants get three or four inches high, I take a double shovel-plow, with a fender, and one horse, and run right up to the corn, and cut and cover everything except the corn. When I am through, I turn immediately, and cross-plow, before leaving the field. Here, I think, lies a secret, because you can not see a weed, and the soil is loosened all around the roots of your small corn. Take each field in succession this way, as it was planted, and weeds will not trouble you. I aim to plow this way twice over, and then last only one way, making five times in all. This season (1874) I only got through four times, and there was hardly a weed to be seen at husking time. This year I raised from 27 acres lacking only a few bushels of 1,800 bushels."

This is about 66 bushels per acre. "Stop a moment," said the Deacon. "I do not see anything wonderful in this method of raising corn. We plant in the same way here, only instead of having a boy to drop the four kernels in a hill, and a man to follow with a hoe, each man or boy drops the kernels, and then covers. There is nothing in the method of cultivating the corn that differs essentially from our plan."—Mr. C. continues: "You can not understand, why I can raise corn, and crib it, for 10 cents a bushel."—"Yes," said the Deacon, "that is what I want to know."—"In the first place," says Mr. C., "board and wages are not as high, as with you. My men cost me $30 per month in summer, say for eight months. In husking time I get men for $1.00 per day. And in the next place, I do not count full wages all the time, for the teams, because I have to keep so many anyhow' part of the year, and if I hire an extra hand, the team costs me but very little more than if it stood in the stable. I will give you the cost, if I had to hire teams and everything, as near as I can, taking a field of ten acres. A team here [with man] will cost $2.50 per day, and board themselves, and plow two acres per day. The account will thus stand as follows:

"Plowing, ten acres	$12.50
Harrowing twice, 2½ days	6.25
Marking out, one horse and man, 2½ days	5.37
Planting	8.00
Tending	17.37
Husking and cribbing 600 bu., @ 5 cts	30.00
Total	$79.49

"This is 13¼ cents per bushel. But then, as I said, I hire my help for less than that, and the cost of the team would often be the same, work or no work."

"I have seen men figure in that way before," said the Deacon. "If the teams are lying idle in the stable, their cost must be charged to the farm. If you do not charge it to the corn crop, it must be charged to some other crop. What does he raise after corn?"—"He sows oats or flax, and follows with wheat, seeded down with clover."—"Then," said the Deacon, "I would like to see him carry out his statement, and tell us what these crops cost. There is interest on the land and taxes. There is cost of teams, and their death and depreciation. There is harness, blacksmith's bill, saddler's bill, cost of wagons, plows, harrows, cultivators, and other implements and machines, repairs, interest, and depreciation. There is the board of the men, and the washing, and the entire expenses of the farm. All these things have to be charged to the farm, and the corn crop should be assigned its due proportion."

The Deacon is right. Suppose Mr. C. raised nothing but corn, and that he kept six horses, three plows, two sets of harrows, three cultivators, one roller, three wagons, and the necessary spades, shovels, forks, hoes, corn-cutters, grindstone, ax, hammer, chisels, nails, bolts, screws, and the thousand and one little things necessary to carry on a well-managed farm. Now, in figuring up his corn costs, would he say, "I have got to keep six horses anyhow, and if I hire an extra hand, the team costs me but little more than if it stood in the stable. I have got the farm, and must pay interest and taxes, whether I plant corn or not. I must feed the horses, and keep them shod, and buy harness, and keep it oiled and repaired, whether the horses work or stand idle in the stable." If he argues in this way, and charges nothing for board, I presume he could figure down the cost of raising corn in a favorable season, and on good land, to something near 10 cents a bushel.

The truth is, farming is a very complex business, and it is not an easy matter to tell just how much any particular crop costs us. We have to take into consideration the condition and fertility of the land before the crop is raised, and after its removal. If any crop leaves the land in a foul condition, the cost of cleaning the field and restoring it to its original condition must be charged to the cost of that crop—not carried forward to the next crop.

One thing seems clear. The whole cost of carrying on the business should be charged to the farm before we begin to figure profits. When this is done, the arguments of Mr. C. are correct and to the point. For instance, he may say "my total expenses on the farm last year for interest, taxes, insurance, and repairs on barns, cost of teams, labor, seed, etc., were $2,000, and my total receipts were $2,500. They will probably be about the same this year. My corn cost me 35 cents a bushel, wheat 75 cents, oats 25 cents, potatoes 40 cents, and hay $8 per ton. My cheese cost me 12 cents a lb., and butter 20 cents. If I farm as hitherto, the cost of these products will be about the same. But I made some bad calculations. My horses cost me $750 a year, and I find they were not all at work more than half the time. This year I will try and do better. Instead of letting a team lie idle, I will hire an extra man for $1.00 a day, and set him to give the wheat fallow an extra plowing, or the corn field an extra cultivating. Last year a man and team, on an average, reckoning everything, cost me $4 a day; but this extra work will only cost me $1 per day, 'because I have got to keep the team and tools anyhow,' and if this extra plowing for wheat, costing say 75 cents an acre, should give me an increase of 3 bushels of wheat per acre, then this extra wheat will only cost me 25 cents a bushel, and the land will be in far better condition for clover and subsequent crops. And so, too, if I cultivate the corn an extra time, both ways, finishing 4 acres per day at a cost of 25 cents an acre, and I get an increase of 5 bushels per acre, then, after deducting 5 cents a bushel for husking and cribbing, this extra five bushels of corn per acre will only cost me 10 cents a bushel, and the land will be cleaner, mellower, and in better condition for oats and wheat."

Taking this view of the matter, Mr. C. is right. And the same remarks will apply to every operation of the farm. But you must first deduct from the total receipts the total expenses of the farm—and then the extra crops produced by extra cultivation, or the extra yield of milk, wool, beef, or pork, obtained from extra care and feed, can be charged merely what the extra labor or feed actually costs.

I am not sure but what we could sometimes adopt the plan of planting corn after wheat to advantage. It would enable us to clean the land. But I should not, on my farm, let the wheat stubble lie until spring before plowing. I would plow the land shallow immediately after harvest, and at intervals of a week or ten days harrow and cultivate it to reduce it to the finest tilth. This would cause the weed-seeds to germinate as soon as we had rain. The young plants could easily be killed by the cultivator, and the stirring of the soil would start more weeds. In November cross-plow six or eight inches deep, and let the land lie rough for the winter. The plowing in spring would bring the clean mellow soil again to the surface, and if the corn is thoroughly cultivated and the land is fall-plowed after the corn is harvested, we should have a field in admirable condition for sowing to barley and seeding down with clover.

We have just been killing our hogs. We weighed each hog alive, and again the next morning, after dressing. The following are the live and dead weights, with the per cent of shrinkage:

	Live Weight. Lbs.	*Dressed Weight. Lbs.*	*Actual Shrinkage. Lbs.*	*Percentage. Shrinkage.*
No. 1	492	424	68	13.8
No. 2	414	352	62	14.9
No. 3	407	354	53	13.0
No. 4	394	331	63	15.9
No. 5	376	322	54	14.3
No. 6	382	321	61	15.9
No. 7	370	314	56	15.1
No. 8	366	313	53	14.4
No. 9	345	291	54	15.6
No. 10	323	275	48	14.8
Average	387	330	57	14.7

In Lawes' and Gilbert's pig experiments the average live weight of the 59 pigs was 212¾ lbs., and the dressed weight 176¼ lbs., or an average shrinkage of 17¼ per cent.

I have killed hogs a great many years, but am ashamed to acknowledge that I never knew the proper temperature of the water for scalding, and I never met with the man that could tell me. The Deacon says he puts one pail of cold water to four pails of boiling water. If the water really boils, and if the water from the well was at a temperature, as

mine now is, of 46°, they would reduce ($4 \times 212° = 848 \div 46° = 89\frac{1}{4}° \div 5 = 17\frac{3}{4}°$) the water to a temperature of 178¼°. In point of fact, however, the Deacon carries his water from the kettle to the scalding barrel, and on a cold day each pail of water, as it was poured into the barrel, would lose considerable heat, and it is not probable that the water is anything like as hot as the above calculation would indicate. None of the books I have consulted, throw any light on the point. Morton's Cyclopædia of Agriculture, says: "The pig should be scalded on a board or cratch, by having the water thrown over it; or it may be scalded in a tub, if care is taken not to par-boil it, which is wrong, but only sufficient to cause the hair to come freely off." This is all very well, but what is "just sufficient?" Stephens, in his Book of the Farm, says, "pigs should be dressed," but does not say how. Loudon's Enclopædia of Agriculture, says that in some counties of England the hair is burnt off, but does not say a word about scalding. The Farmer's Dictionary, a Compendium of Practical Farming, chiefly from Rham, Loudon, Low, and Youatt, and the most eminent American authors," published by Harper Brothers, says: "The common method of dressing hogs in the United States, is to scald the carcass by immersion into a hogshead of water *heated by hot stones*, and rub off the bristles and scrape the skin by knives; the chine, head, and feet are also taken off." Thaer's "Principles of Agriculture," certainly a very able work, contains nothing to the point; neither does Boussingault's "Rural Economy," nor Johnson's "Farmer's Enclopædia," nor Fox's "American Text Book of Agriculture," nor Kemp's "Agricultural Physiology." After much search among the books and papers, I thought I had found it in an interesting article written by Charles Cist, of Cincinnati, "On the Hog and its Products." He tells how they dress hogs in the large establishments of that city, "at the rate of three to the minute," going into all the details. The scalding troughs are of a thousand gallons capacity, and are heated with steam, but he, like all the rest, most provokingly omits to say at what temperature they keep the water for scalding the hogs.

And so, when we were killing the hogs, I got a thermometer, and without saying anything, waited till the butcher pronounced the water just right. He is a very skillful and intelligent man, and got a good scald in every case, judging of the temperature of the water by his hand. I put in the thermomter, and after stirring up the water and keeping the thermometer immersed for a minute or two, I found the temperature of the water to be 152°, or 60° below the boiling point. After the hog had been taken out, the temperature was 147°. We tested several times, and found that this experienced butcher got the temperature within a degree or two of 150°, before the hog was put in.

A correspondent at Snow Hill, Ind., writes: "It is stated in the Scientific Record of Harper's Magazine, that Lawes and Gilbert's experiments show that Indian corn meal alone, is a defective diet for fattening hogs, and it is recommended to mix with it food rich in mineral and nitrogenous matters. Will you please tell us in Walks and Talks, what food to use and the proper proportions to mix with the meal, specifying by name the food or foods rich in mineral matter and nitrogen?" "Good," said the Deacon, "he hits you there. I have often been vexed at you for telling a farmer that 'foods rich in nitrogen and phosphoric acid, make rich manure,' as though that was telling us anything. You should specify the foods by name. Then you often say that fattening pigs require food 'rich in available carbonaceous matter,' as though that was giving useful information."—"Stop scolding, Deacon," I replied, "and let us see if there is any evidence that corn meal alone is a defective diet for fattening hogs. In the first place, there are say 15,000,000 hogs fattened in the United States every year, and I suppose at least 10,000,000 are fattened on corn alone. This fact would lead us to ask for very positive proof, before we decide that corn is a defective diet for fattening hogs. The single experiment referred to, is by no means conclusive. The facts are these. The pen of three pigs having corn meal alone, ate comparatively little food, and gained comparatively little. They ate 45¼ lbs. Indian meal each pig, per week, and gained 9.21 lbs. each per week. The three pigs having bran and lentil meal alone, ate 63 lbs. per week, and gained 12.62 lbs. The three pigs which were given 14 lbs. of Indian meal each, per week, and were allowed in addition, all the bran and lentil meal they would eat, ate in all 66 lbs. each per week, and gained 14 lbs. The pen of three pigs which were given 14 lbs. of bran each, per week, and were allowed all the corn meal they would eat in addition, ate 58¼ lbs of the two foods, and gained 12.42 lbs. The pen of three pigs which were given 14 lbs. of bran, and 14 lbs. of bean and lentil meal each, per week, and all the corn meal they would eat besides, ate 64¾ lbs., and gained 14.46 lbs. This was the largest gain of the series."

Taking the above facts as they stand, [Full details of these experiments will be found in "Harris on the Pig," page 122. Ed.], it is clear that if we wish a pig to fatten rapidly, our great aim must be to induce him to eat as much food as possible. It does not seem to make much difference whether the food is corn meal, barley meal, or bran and lentil meal, (say pea-meal), and we may reasonably presume the same is true of wheat, oats, or rye meal. If they will eat enough and digest it, they will gain rapidly. More seems to depend on the pig than on the food.

Now it so happened that two of the pigs in the pen of three which had Indian meal alone, had large swellings on the side of their necks. The hogs seem to have been a quarrelsome set, and it is not impossible that these swellings were the result of a vigorous scratch from the teeth of some of their neighbors, before or after they were shut up to fatten. In my own large herd of pigs, I find large swellings from this cause by no means uncommon. I lance them and they soon get well. Still, it is a fact that these swellings were found on two of the pigs having corn meal alone, and I suppose on none of the others. And it *may* be that the food was the cause of it, and that Indian meal alone is a defective diet. Still, I do not think so. There is no positive proof. The two pigs which had the swellings gained much more than the pig in the same pen, which was not affected. For twelve days before the experiment commenced, all the pigs had the same food. During these twelve days, one of the pigs which afterwards had the swellings, gained 28 lbs., and the other one 20 lbs.; while the other pig gained only 5 lbs. After these three pigs were shut up and fed Indian meal alone, the first of the three pigs gained in 8 weeks 96 lbs., and the other 71 lbs., while the one not affected with swellings, gained only 54 lbs. This last pig probably ate comparatively little, and consequently gained little. It was not defective food, but defective appetite.

In the pen having bean and lentil meal, and bran, and all the Indian meal they would eat in addition, one of the pigs gained 142 lbs. in 56 days. And one of the pigs in the pen which had 2 lbs. of bran each per day, and all the corn meal they would eat, gained in the 56 days, 143 lbs. This was the largest gain of any pig in the series.

And so, if my correspondent thinks Indian meal a defective diet, he can give his pigs two pounds each of bran per day, in addition to all the corn meal they will eat.

It must be understood that we are talking about pigs shut up to fatten. And my own opinion is that Indian corn is not a defective food. For store hogs, or young pigs five or six months old, that we wish to grow rather than fatten, I would give more bran (or clover), and less corn meal. Corn is, I think, the most fattening of all cereals, and is too rich for growing pigs. In the winter we have no better food than bran to mix with the corn meal. And if we could give a few mangels or other roots, so much the better. They are easily digested and keep the pigs healthy. In the summer green clover will be the best addition to the corn meal.

I am feeding my own herd of breeding sows on steamed clover hay, cut about half an inch long. We mix a few sliced turnips or mangels with it, and steam it altogether, sprinkling a little fine middlings or corn meal on it in the troughs, before letting out the pigs. If the clover hay is cut early and nicely cured, it is as good as bran, and in my case a good deal cheaper. At any rate, it lessens my meal bill.

Some Cheap Fences.

Several correspondents have kindly sent us descriptions and sketches of cheap and convenient fences, which we here illustrate. "J. M. S.," of St. Joseph, Mo., sends a description of a light portable fence, shown at fig. 1, as follows: An oak log 16 feet long is sawn into strips 1½ inch thick, by 2 inches wide. These strips are cut into an equal number of pieces 5 and 3 feet long respectively. The longer pieces are the posts, and the shorter ones the braces. The posts are driven into the ground about one foot. A short stake is driven into the ground, two feet from the bottom of the post.

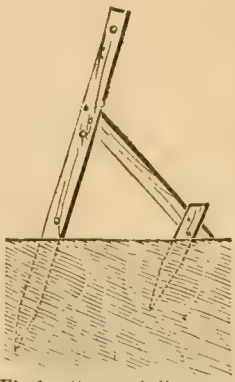


Fig. 1.—"J. M. S.'S" FENCE.

The brace is nailed with a tenpenny nail, partly driven in, so that it can be easily driven back and withdrawn, to the post and the brace. The posts may be made to lean backwards if thought desirable. This will be an improvement to the fence, if the pickets are only slightly attached to the wires. The posts are bored with three holes, so that three light fence wires may be run through them. For a light garden fence, corn-stalks stripped of their leaves, or brush, or lath, may be woven in the wires. If pickets are used, they may be fastened to the wires with light staples, or in any other manner that may suggest itself. Fig. 2, represents a portable fence sent us by "a Virginian." It consists of the usual posts and rails, but instead of morticing the posts, they are simply bored to admit a fence wire. A piece of the wire is passed through the holes, forming a loop on one side, into which one end of the rail is placed, and at the other side of the post, the wire is twisted around the end of the rail of the next panel. This is shown in the illustration. Boards may be used in place of rails, and the fence will be much stronger than if the boards had been nailed on.

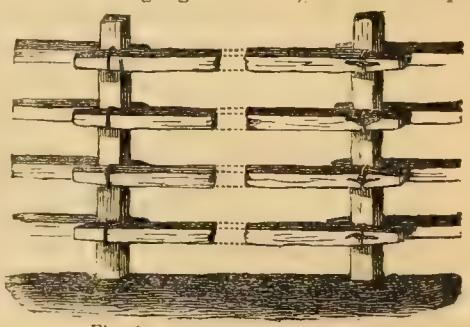


Fig. 2.—FENCE FROM VIRGINIA.

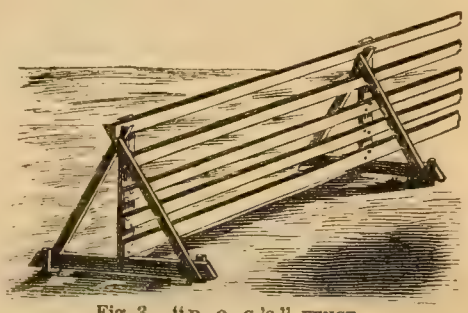


Fig. 3.—"D. O. C.'S" FENCE.

Figure 3 is a movable fence described by "D. O.

C.," Crawford Co., Ohio. It consists of a sill 4 feet long, 5 inches wide, and 1½ inch thick. A gain is cut in the upper edge, and the ends are cut with a bevel, as seen at *a*, figure 4. The upright pieces on which the boards are nailed, are 4 feet 8 inches long, and also 5 inches wide and 1½ thick. The lower boards are 6 and 5 inches wide, the three upper ones are 4 inches, and all one inch thick. The spaces between the boards from the bottom upwards are 4, 5, 7, and 9 inches. The first panel is made before it is set up. It is then set up with the lower part inserted in the gain, and is braced as shown in the illustration, with braces, cut in the shape seen at *b*, fig. 4. The sills are raised from the ground an inch or two to preserve them from rotting, by a small stone or piece of wood, and are held in place by means of a stake driven in the ground. This fence is said to cost only half as much as that with posts, and lasts much longer.

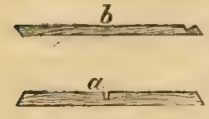


Fig. 4.—BRACES.

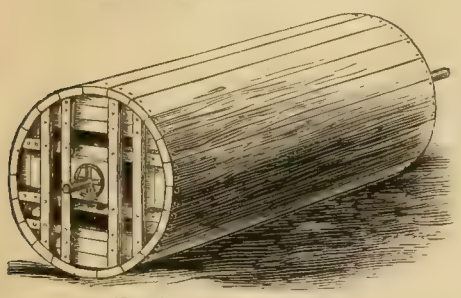


Fig. 1.—WOODEN ROLLER.

More About Field-Rollers.

There are few more useful implements upon the farm than the roller, and its use should be encouraged. Every meadow that is to be mowed should be rolled in the spring, more especially if it is to be mowed with a machine. Fall wheat or rye should be rolled as soon as the ground is dry enough in the spring, as it will have a very beneficial effect upon the crop, saving thousands of plants that have been partly drawn out of the ground by spring frosts. Rolling is of great advantage after sowing clover or grass seed, as it compacts the soil about the seed, which helps germination. It is very useful for the same reason upon a cornfield as soon as it has been planted, and for all root crops the field should be rolled when they are planted. We here give in response to many requests, directions for making wooden and cement rollers. The first can be made at a very small cost by any farmer who can handle tools, and the second needs but very little skill, and the material is not costly. The wooden roller is shown at figure 1. It is built upon a square piece of oak timber, 12 inches thick and 8 feet long. Pieces of 4×4 oak scantling are bolted to the timber, and others are bolted to them, as shown in the illustration; strips of three-inch oak plank are then dressed upon their edges so as to fit closely, and these are firmly spiked upon the frame of scantling. When these are filled, the outer surface of the roller is planed down at the joints of these

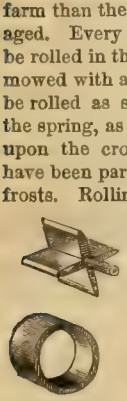


Fig. 2.

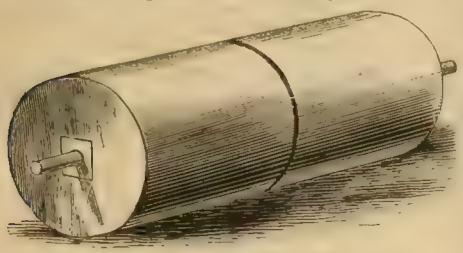


Fig. 3.—CEMENT ROLLER.

strips, so as to make it perfectly round. At each end of the roller a winged gudgeon is fitted into the center timber for the axles. This gudgeon is shown in figure 2. It is 8 inches long and the same

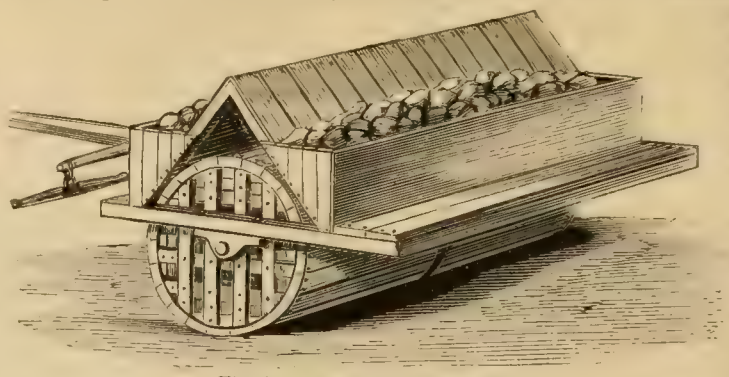


Fig. 4.—THE ROLLER COMPLETE.

in width; the inner end is brought to a sharp edge, so that when the timber is bored to receive it, in part it may be driven up to its place, making a tight fit. To prevent the timber from splitting, an iron ring, sharp upon one end, half an inch thick, and four inches long, is driven in around the gudgeon before that is driven home. The ring is shown in figure 2, and the manner of its use in figure 1. This roller is 32 inches in diameter and 8 feet long. It may be made in two sections of 4 feet each, by having the central timber bored from end to end, and using an iron rod of 1½ or 2 inches in diameter for the axle. In this case an iron washer or plate should be fitted to the end of the central timber, and an iron ring two inches thick be shrunk or keyed on to the axle, to prevent it from sliding back and forth.

The cement roller is shown at figure 3. It is made of a mixture of one part of Rosendale or Portland cement with three parts of fine sand. The cost may be reduced by making the central portion of coarse concrete of broken stone, with the mixture above mentioned. Equal parts of broken stone and cement and sand may be mixed for the concrete. The mixture is placed in a mold, in the center of which is placed the wooden axle, and is rammed down firmly. The solidity of the roller depends greatly upon the ramming down of the cement. The mold is a wooden tub without a bottom, made purposely, smoothly finished inside and put together so that the hoops may be knocked off when the cement has set, and the staves taken apart. The roller is made in two parts, each four feet long, and 30 or 32 inches in diameter. Either of these rollers may be used in the frame shown in figure 4. This is made with a step behind for the driver to ride upon, and a box in which stone may be put to increase the weight, if necessary. The frame and box is so completely shown in the illustration, that no description is necessary. The timber used should be oak, and as weight and strength are the objects aimed at, it may be as heavy as possible. Rollers of various kinds are sold, including those of iron, and if one has the money to invest in such an implement, can be suited with but little trouble. Many farmers, who have thus far managed without a roller, think they will continue in the old way, rather than be at the outlay required to procure one. There is really but little outlay of money required. If the farmer is the mechanic he should be, he can do all the work himself, except the blacksmithing.

How to Make a Pole Fence.

"W. L. T.," Mount Hope, Wis., gives the following method of making a pole fence, which may be usefully adopted where the timber is too small to be split. The method may also be applied in part to the preparation of split rails for a post and rail fence of the ordinary kind. The poles are cut 10 feet long, the posts being set 9 feet apart. Each end of the pole is hewed flat, so that it can be nailed to the post. For convenience in hewing them, the following contrivance is used. A pair of blocks are procured, and made into a "bed," by nailing strips to them, as shown in fig. 1. These blocks may be kept exactly so far apart that they will serve as guides for trimming the poles to their proper length. Notches may be cut into each block, in which the pole to be trimmed is placed. A "horse" is used to hold the pole firmly, while it is being trimmed. This is made of a heavy pole, 20 feet long, and a foot thick at the butt end. At the thick end two legs, 3 feet long, and at the other end two pins, 8 inches long, are inserted. The pins are placed so that when they are made to rest upon the pole, they grasp it and hold it firmly. The horse is shown in use in fig. 1. While the pole is

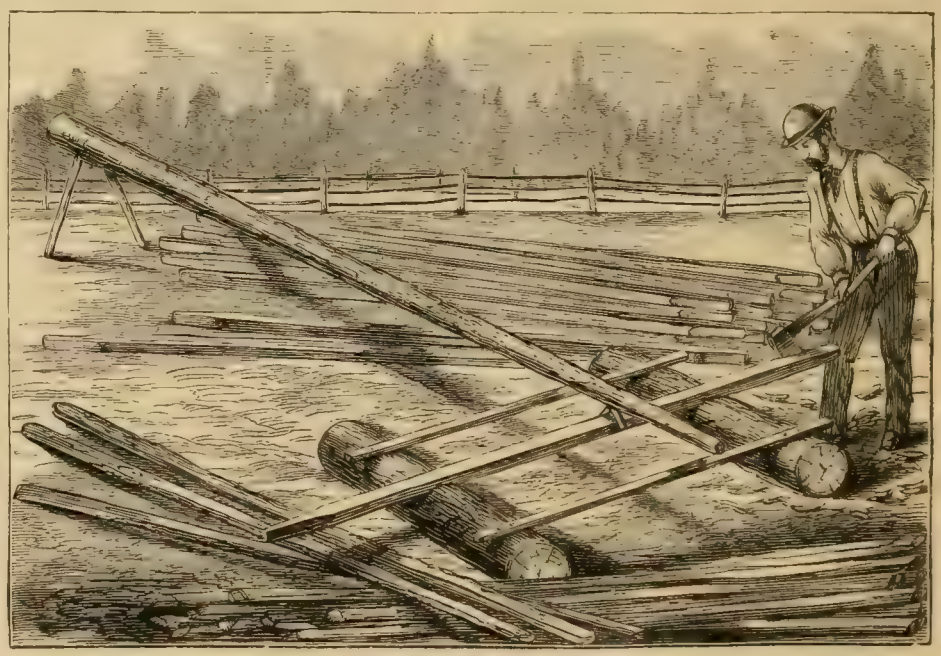


Fig. 1.—MANNER OF CUTTING POLES.

Fig. 2.—CUTTING-HORSE.

thus held, the ends are without difficulty trimmed and hewed, as may be desired. Fig. 3 shows the method of building the fence. The ends of the poles are nailed to the posts, and to keep them

Fig. 3.—PLAN OF FENCE.

level with one another, each end of the pole to a different side of the post, or each panel of fence may be nailed to opposite sides alternately.

A Road-Grader.

Graders for repairing roads are coming into more general use. Even the rudest of these implements is of great service in smoothing and compacting the surface, and in giving a proper slope to the sides of the roads. But some of these are better than others. One of the best of them is shown at fig. 1. It is made of a piece of heavy hard-wood plank, 10 feet long, (or longer, if necessary,) 12 inches wide, and 3 or 4 inches thick, to which a long tongue is mortised and well braced. The bot-

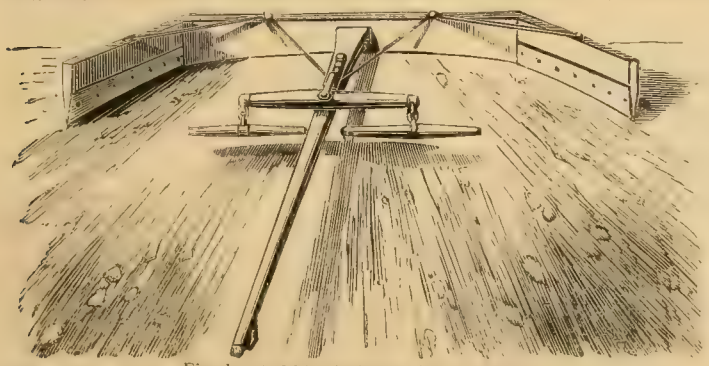


Fig. 1.—A ROAD-GRADER, OR SCRAPER.

tom edge of the plank is hollowed out, to suit the curvature of the road-bed. A curve of 3 or 4 inches from the ends to the center, would be sufficient to give a good shape to the road. A wing of similar material, fastened to each end of the long plank, and well braced in such a position that it projects forward about 45 degrees. The ends of the wings are depressed 8 or 10 inches, as shown in the section, fig. 2, which represents the shape of the road-bed, when finished. The lower edges of the wings are beveled, and strengthened with a band of steel, 3 inches wide by ½ of an inch thick. When the sides of the road-bed have been plowed, this implement will draw the loose earth toward the center, and there level it. Its occasional use during the summer and fall, after wet weather, when the

Fig. 2.—SECTION OF ROAD-BED.

road has become cut up into ruts, will fill the ruts, and make the surface smooth and level again.

An Improved Pig-Trough.

A Western subscriber sends us a description of an improved pig-trough, which has many advantages. It is shown in fig. 1. The bottom of the

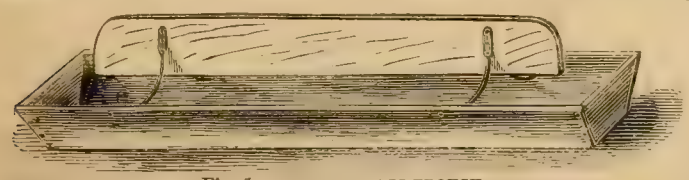


Fig. 1.—IMPROVED PIG-TROUGH.

trough is an oak plank 12 or 14 feet long, 12 inches wide, and 2 inches thick. The edges are beveled so as to fit the slope of the side boards. The ends are of the same material, cut with a proper slope to form the shape of the sides, and nailed firmly to the bottom with 6-inch spikes. The sides are of sound 1¼-inch pine plank. A pine board is suspended over the center of the trough 6 inches above the bottom by iron rods bent and flattened out at the ends. The flattened ends are punched with holes, through which small carriage bolts are put, to fasten the center-board in its place. Figure 2 shows a section of the trough, the shape of the iron rods, and the manner in which they are attached to the center-board, and the sides of the trough. Pigs can not wallow in this trough, nor get into it when feeding, and if several of the iron rods are used, so as to divide the trough into sections, a good deal of quarreling and fighting over the feed will be prevented, as each animal may then have its own section, and can not crowd its neighbor out of that which belongs to it.

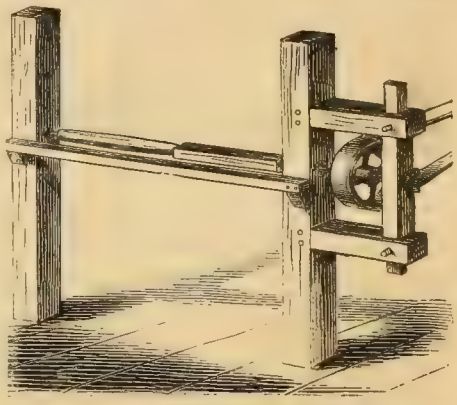
Fig. 2. SECTION.

To Draw Water from a Spring.

"M. H. P.," wants a method of drawing water from a spring 160 feet from his house, and 17 feet below its level. He asks if a suction pump at the house, with cement pipe laid to the spring, would operate successfully. If any readers of the *Agriculturist* have had experience in drawing water under similar circumstances, we should be glad to hear from them. In the meantime our correspondent can feel assured that the plan he proposes will fail. No suction pump will operate unless the pipe is air tight, which a cement pipe is not. Even with a lead or iron pipe, a suction pump in such a case as this, will not operate successfully. The valves of the pump will almost always leak air, and the water falls back again to the spring, leaving the pipe empty. When the pump is worked, a long column of air must be removed before water can be drawn up; this requires a great amount of labor, and if the valves are not perfectly air tight, it is impossible to do this, and the pump is useless. In a case in which the plan proposed by M. H. P., had to be abandoned, one here described and illustrated was successfully adopted, and is offered as a suggestion. At the foot of a village lot, was a shallow well or deep spring, about 150 feet from the house. A force pump was set in the spring, and a tin-lined lead pipe was carried to the house, two feet beneath the surface of the ground. A series of common fence posts were set up 25 feet apart. Strong hard wood pins were inserted in these posts, at the top, projecting horizontally and at right angles to the line from the house to the spring. Arms about three feet long were pivoted upon these pins, and secured by pegs driven through the ends of the pins. These arms were connected by fence wires at each end. The arm at the end next to the house, and that next the well, had handles attached at right angles to them, as shown in the engraving. When the handle at the house was moved up and down as a pump-handle might be, that at the well was moved in the same manner. This last was attached to the pump rod, and as it was moved the pump was worked, and the water was forced through the pipe to the house. As the valves were always wet, and sustained the pressure of several feet of water, they never leaked, and the pipe was always full of water. By keeping the pivots of the arms always lubricated with soft soap, or black lead and tallow, they worked with ease, and it was no more difficult to raise water by this contrivance, than to work an ordinary pump in a 20-foot well.

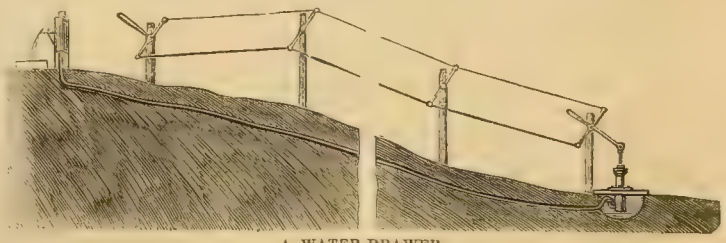
A Home-Made Lathe.

"A Subscriber" asks for an illustration of a lathe for turning neck yokes and similar articles



A HOME-MADE LATHE.

for farm use, and which can be operated by a common horse-power. Such a lathe is shown in the accompanying engraving. It consists of two posts firmly set in the ground, one of which may be a post of the workshop, or of any outbuilding or a frame attached thereto. A small shaft having a chuck keyed upon one end, and carrying a pulley, is fitted into a frame having a sliding post, as shown



A WATER-DRAWER.

in the illustration. A thumb-screw is attached to the other end of the shaft, in such a way that the shaft and the chuck may be accurately adjusted to the work in hand. The sliding post is held in place by pins, and may be moved back or forth as may be desired. A rest is bolted to the posts, upon which the guide or slide rests, may be fixed. An ordinary one horse tread-power, would be sufficient to run this lathe, giving from one to two thousand revolutions of the lathe per minute, according to the diameter of the pulley used. In turning neck yokes or whiffle-trees, it would be a saving of time to turn two from one piece of timber, as shown in the illustration.

Making Wooden Drains.

When no other material than wood can be procured, and draining must be done, wooden underdrains are preferable to open surface drains. In

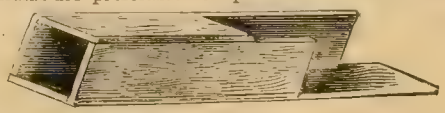


Fig. 1.—SQUARE WOODEN DRAIN.

reply to a correspondent, we describe a few kinds of wooden drains that may answer the purpose of better ones when those are not to be had. Hemlock boards will be found the most durable in situations where the drains will be always flowing. If

they will be alternately full and dry, no timber can be depended on for more than 8 or 10 years; otherwise hemlock will remain serviceable for 20 years. Strips 3 inches wide may be taken and sawed into lengths of 3 feet. Of these, square tubes are made, and placed in the drain as shown in figure 1. The strips are cut into these short lengths so as to give a sufficient number of openings for the entrance of the water, and in nailing the strips together, at least one-sixteenth of an inch should be left between the ends of the strips for this purpose. Strips of this size will make a drain 2 inches in diameter. When larger drains are made, wider strips may be used, and to save lumber, they may be made in the shape shown at figure 2. Two strips are nailed together at their edges to form the channel of the drain, which should always be placed with the point downwards, for the purpose of causing a more rapid flow of water, and thus preventing the accumu-

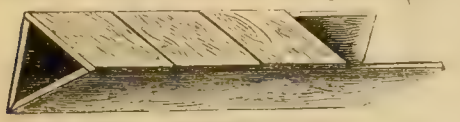


Fig. 2.—TRIANGULAR DRAIN.

lation of silt or deposit. The covering is made of pieces of the strips cut to fit the width of the trough. If the strips were to be nailed lengthwise, there would be danger of their splitting and spoiling the drain after it had been laid; when cut and nailed crosswise, this danger is avoided, the numerous spaces left between the joints also permits the water to enter the drains with greater freedom. This form may also be used for a small sized drain, and three four-inch strips will cost the same as the four three-inch strips used in the other form, (fig. 1). One thousand feet of boards will make 1,000 feet of drain of this size, and the cost of nails will be a trifle. The cost of a drain of this kind may, therefore, be easily ascertained.

A Brush-Harrow.

When manure has been spread in the fall or winter upon meadows, it should be broken up and evenly scattered in the spring. The most effective method to do this is by hand, but it is too laborious. The ordinary harrow gathers the manure into bunches, instead of spreading it, and some better implement is needed. The brush-harrow, shown in the illustration, does this work in the best manner.

A BRUSH-HARROW, OR DRAG.

When drawn over the field, with the driver standing upon it, it rolls the lumps of manure over, breaks them up, and leaves them well incorporated with the sod. It is made of an oak plank, 4 inches thick, 14 to 16 inches wide, and 8 to 10 feet long. A tongue is bolted to the center, in such a manner that, when in use, the front of the plank is raised a few inches from the ground, so that the lumps of manure are not pushed along, but are brought beneath the plank, and broken up. A row of holes, 1½ inches in diameter, are bored at the rear edge of the plank, about 2 inches apart. If the plank is weak, and there is danger of splitting it, the holes should be bored in two rows, every alternate hole being two inches further from the edge of the plank than the others. The butt ends of small brushy limbs of tough wood, such as oak or hickory, may then be placed in these holes, and split and wedged, so as to be held firmly. This makes a brush-harrow of the best kind, which will break up and pulverize the manure, and work it into the grass. This brush-harrow is also an excellent implement to finish the surface of a field newly sown with grass seed, or to brush over a wheat or rye field in the spring, after clover seed has been sown.

Gardening on Shares.

BY PETER HENDERSON.

So many write to me for advice as to gardening on shares, for persons with capital to undertake gardening, and many other matters relating to the business aspects of market gardening, that I can no longer answer by letter, but ask you to allow me to make a general response through the *Agriculturist*. Inquiries as to gardening on shares come from every section of the country, some of them from districts where to carry on the business in any form would be next to impracticable, and if done on shares, utterly absurd. In an experience of over a quarter of a century, I have never known of but a single instance in which gardening on shares was carried on for more than three years, and even in that instance it resulted in failure, and was throughout most unsatisfactory. It *may* now and then be judicious enough for the owner of land to work on shares with a man *he knows all about*, and who has proved himself capable and otherwise worthy of confidence, but to expect, as nine-tenths of my correspondents on this subject do, that a gardener can be found to order, who can be warranted as capable, honest, and amiable, and every other way qualified to fit such a position, is expecting a little too much from poor human nature. In all such cases, where a man is an owner of land that he wishes to convert into a market garden, let him engage a competent man, if he can get him, and pay him a salary for at least one year; then, if both find that they can trust each other, and their experience has shown what a fair and equitable arrangement would be, it will then be time enough to try what can be done on shares. Such men are scarce, I know, and high-priced when found, but men fitted to be partners with those whom they never before saw, are still scarcer, and would be likely to prove dearer than the salaried man would be. Then we have another class that inquire for moneyed partners. Only last week I had a letter from a gentleman, evidently educated and intelligent, writing from some unheard of hamlet in Louisiana, who modestly asked me to endeavor to find him a partner having a capital of $5,000, to engage in the business of fruit and vegetable raising. Whether he was of the class alluded to in your humbug article in December, I know not, but if not of that class, he was certainly quite unused to the ways of the world. Were this a solitary case, I would not have alluded to it, but I have had many such applications, though none of them are so utterly absurd as this. The writer of your humbug article tritely says: "Leaving money out of the question, how can a sensible person associate himself in business with an entire stranger!"—This sums up the whole matter, and should be a sufficient answer to all who are foolish enough to think working partners (to them utterly unknown) are ever likely to be found—having the combination of qualities necessary to successfully run a farm or garden on shares. There is another class of inquirers—many of them in far distant States—who have farms or gardens they wish to rent or to sell. If these people would think a minute, they would see how unlikely it is that any one can be found to bite at such a bait, no matter how fine it may be shown to be, in a country like ours, where land for such purposes is almost everywhere a drug. If land is to be rented or sold for market gardening, it must be to some one who is nearer to it than a thousand miles.

[This note of our contributor shows that we are not the only ones who are asked to do impossible things. Not a week passes but we are offered a commission to sell property in some far-off locality, to find a gardener on shares, to look up a capitalist to help develop a farm that has "minerals" on it, or some such thing. The very day this article came, we had a letter from a gentleman in a Southern State, offering us $200 if we would find him a practical man *with capital*, to go into fruit growing. We would say to all such, that when the publishers or editors of the *Agriculturist* wish to sell or rent property, or wish to engage a man for any purpose, they advertise in the journal most likely to reach the persons they seek. They have done this during the past year, and are not likely to make personal exertions to dispose of the property of other people, when they have no time to do it for their own. As to market gardening, land is a secondary consideration, and a market is the first. A man had better pay $1,000 an acre for land near New York or other large city, than to take it at a distance for nothing.—ED.]

Willows—Osier.

Every few years some extravagant statements in regard to the profits of the cultivation of osiers, causes a mild excitement, and we are in the receipt of letters of inquiry, some of which ask us about one point, and some about other points in relation to their culture. This article is intended as a reply to several letters, and covers about all the ground. In Europe, where osiers are an important crop, very nice distinctions are made in the quality of the rods, and those intended for the finer kinds of basket work, are yielded by different species, or varieties, from those intended for coarser work; the rods of some kinds are valued for their strength, while the others are for their suppleness and the readiness with which they may be woven into intricate designs. In some of the English catalogues there are over 30 kinds enumerated, most of which are not to be procured, and not even known in this country. Those who wish to undertake the growth of osiers, must either import their plants to start with, or be content with the few kinds that can be had at our nurseries. It is commonly supposed that to be useful as osiers, the willows must be naturally of a dwarf growing kind; this is a mistake; the production of osiers is a matter of cultivation, and if the twigs are of a useful quality, the largest species may be used as well as the smaller ones. The number of willows offered by our nurserymen is very small, and mostly of ornamental varieties, such as the Kilmarnock, Weeping, etc. They generally offer "osier willows," without designating the species, and we assume that it is the common White Osier, *Salix viminalis*, a kind remarkable for its rapid growth, and the great length of its shoots, but its rods are not so tough as those of some other species. The White Willow, *S. alba*, about which there was so much excitement as a hedge plant, a few years ago, may be made to yield useful osiers, but not so good as that of its variety, *Vitellina*, the well known Golden Willow, very common as a large tree, and conspicuous by the bright yellow color of its recent growth. This is much cultivated in England, as an osier. One of our native species, the Shining Willow, *S. lucida*, also called the Laurel-leaved and Bay-leaved willow, is the handsomest of all willows, (See *Agriculturist*, April, 1873, for engraving), and will give good rods for coarse work. These, so far as a thorough inspection of the leading nursery catalogues goes, are all the kinds readily attainable, though there are others in private hands. It is possible that a trial of other vigorous native species, may show that some of them are worth cultivating, and in the older parts of the country, some of the European osier species have become naturalized, that are not to be found in the nurseries. Because some willows grow naturally in wet places, it is a mistake to suppose that low damp ground is essential to osiers; the fact is that the best osiers are only grown upon good soil, which should be drained and prepared as for ordinary farm crops. Willows are always propagated from cuttings, which are of branches of one, or at most two years' growth; these are cut into pieces a foot long, with one clean slanting cut, and sharpened at the lower end, to

facilitate pushing them into the soil. The distances apart depend upon the variety; the common osier is set 12×20 inches, while the Golden-willow is put out 8×16 inches; these are about the extremes; the plants are set closely, to induce a straight upward growth. In setting, a planting frame is used, made with slats to mark the distance between the rows, and upon these are notches, to show the position of the plants; the planter having his hand guarded with a leather glove, pushes the cuttings in a slanting direction quite into the ground. The surface is to be kept clear of weeds, by the use of cultivator and hoe, and each fall the land is stirred between the rows with the plow, and manured if need be. The first year the shoots are of but little value, but they must be removed, in order to induce a strong growth next year. As soon as the leaves have fallen, the shoots are cut with a sharp hooked knife, close to the ground; the second year's shoots will be of value; each cutting must be close to the ground, and no stump or stub formed above the surface. The rods are tied in bundles of 3 feet girth, measured at 8 or 9 inches from the but-end. In England, where the cutting is paid by the bundle, this is the established measurement. The bundles are stood on their but-ends in water, to the depth of 6 or 8 inches, fixed so that they will not blow down, and when they show signs of growth in spring, the bark will be sufficiently loose to peel easily. This article is already too long to allow the process of peeling to be described. Another method is to set the bundles up where they will dry, and then put them under cover; these osiers are peeled by first boiling or steaming, and though the rods are not so white as the others, they are much more durable.

As to the profits of osier culture; the commoner kinds, in England, bring a net return of about $30 per acre, while in some cases the better varieties, under the most careful treatment, give a profit of about $100 to the acre. When cultivated as here described, the roots are readily removed from the land if it is needed for other crops.

It may be added that a few willows treated by cutting back every year, will be found useful upon any farm, as furnishing withes servicable for a great variety of uses, and florists and nurserymen can in this manner easily provide themselves with stakes for flowers and other plants.

The Management of Commercial Hot-beds.

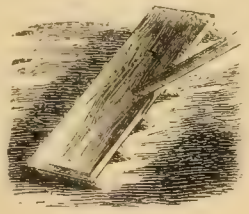
BY J. B. ROOT, ROCKFORD, ILL.

To the commercial florist or gardener, even with the most complete greenhouse, hot-beds are a very desirable and profitable adjunct, enabling the business to be largely increased with but small expenditure; and when capital is limited, and there are several uses for every dollar, they make a very serviceable substitute for a greenhouse in the production of vegetable plants, and in bringing forward the more popular flowering plants which have been procured already rooted from large growers. Well managed, they yield the larger profit of the two. They burn no wood, and need no midnight fires, and the manure used in them is more valuable after than before, and their cost is not great, especially if a fair proportion of the beds be covered with cotton cloth, as described in the February No. of the *Agriculturist* of last year.

But to be made profitable, it is not enough merely that they be managed to produce *good plants*, but they must produce them at the *least expense* consistent with good quality. There seems to be a feeling with amateurs and beginners that somehow it helps a hot-bed to hover over it, and "fuss" with it lazily, which leads to a vast deal of dawdling that hardly comports with profit in any business. While everything should be touched lightly and handled carefully, yet all can be done expeditously, and the conditions of healthy growth still be preserved. Unnecessary labor and uselessly multiplied steps in no wise promote thrifty growth, while every available economy of labor and of method does promote profit.

After a little experience in making beds, it is not necessary that all the manure be piled and turned a certain number of times, and in fact only a part of it need be piled at all. Only enough hot manure need be used to start fermentation throughout the bed; but to secure this promptly, it should not be mingled hot and cold together, but the hot kept in considerable quantity, say in layers of six inches or more, alternately hot and cold, provided only that the cold be not actually frozen, or at least but a small part of it. If, perchance, too much cold manure has been used, and the heat rises tardily or unevenly, a few pailfuls of scalding-hot water will at once start fermentation. Made in this way, half the labor is saved, the beds maintain their heat longer, the yard is less impeded with piles, and much time is saved at a hurrying season.

Making compost heaps of alternate layers of sod and manure, from which to procure hot-bed soil, is expensive and laborious, and in the dry climate of the West, at least, the soil is not ready for use for two or three years. My hot-beds being on a sandy loam, I have found an excellent substitute for specially prepared soil, in the scrapings of the hot-bed yard after the manure has been removed. The leachings from the manure have furnished an abundance of available fertility, and the soil thus impregnated, together with the fine scattering manure, having been raked into piles in June, are in excellent shape for sifting and storage in the fall. For most uses I prefer it to the rotted sod. In case of a clay loam, a proportion of sand should be added in sifting. If beds are located on a stiff clay, this method is not practicable. If the annual scraping threatens to produce an excavation, it is a simple matter to fill it up with suitable soil from elsewhere.



MARKER.

For sowing seed in beds in which the soil is placed upon the manure, we use a very simple marker, shown in the cut, made by tacking to a common six-inch board, narrow cleats at 2 to 4 inches apart, as needed, and making it 2 feet long for convenience. In this is inserted a handle at a suitable angle. By using this from both sides of the bed, the little drills can be made from one side to the other, clear and distinct, and after the seed is sown, by drawing the back of the marker over the rows, the covering is made very even and regular. But usually, instead of filling the bed with soil, we find a profit, both for sowing seed and for "pricking out," in the use of boxes of suitable size, filled with soil, and placed directly upon the manure. Not only can the boxes be moved easily, if greater or less heat is desired, and the bed be more quickly cleared when through with, but by placing them up on work-tables, transplanting into them is twice as rapid and easy as into the bottom of a bed.

Transplanting or "pricking out," repeated two or three times, and root-pruning by drawing a knife between the rows of plants, induce stocky growth and early fruiting, furnishing such plants as soon drive all others from the market. But transplanting a great many thousands repeatedly, becomes a large item of expense, and the most expeditious methods must be studied. My quickest workmen are usually boys 12 to 14 years of age, who work in twos at a narrow table of proper hight, upon which are placed the boxes, one at a time. While the right hand makes a hole, with a dibble 3 inches long, the left picks up a plant from a lot conveniently near, and slips it into the hole already made, when the operation is finished by a downward punch from the dibble on one side, and the thumb and finger of the left hand, just released from its plant, on the other. Working in this manner, two boys transplant a great many thousand in a day. As soon as the boxes are full, they are sprinkled and screened from the full sun for a day or two, and are soon revelling in "pastures new."

Watering, especially in clear warm days, becomes no small task in a large yard of beds, and water should never be carried when it can be made to flow. The best location for a yard is upon a south-east slope, and upon the highest point the cistern or well should be located. If a well, it pays to use, for supplying a large number of beds, some of the smaller wind-mills to raise the water into a tank so high that, with the help of a small rubber-hose, all the beds can be sprinkled quickly and cheaply, without lifting a bucket. The most watering must always be done on clear bright days, when there is also most other work to be done. The same principle will apply to the earth-bins, implements, etc., that they all be upon the upper side of the grounds, so that every move shall be down hill.

If every third bed or frame be omitted in each third row of beds, it makes the most convenient and accessible place for a transplanting table and for storing shutters, sash, and mats, during the day, when they are not in use.

Oftentimes, because of dull sales, or a desire to be ready for an unusual demand, the florist or gardener finds his plants crowding him, and as a freezing night threatens, he has not enough shutters or mats to protect them all. In such cases even newspapers spread over them, and held down, are a considerable protection, or plenty of hay or straw spread over the beds, and held down with boards, will answer excellently. Such a motley yard, of course, would not be regarded as ornamental in a fashionable quarter, but it saves the crop, and the next day sees no sign of the threatened disaster.

Hints on the Adornment of Rural Homes.

BY F. R. ELLIOTT.

Much has been written, and often well written, with regard to the decoration of country homes, but it has been too much the tendency of such writings to give the reader an idea that to have a fine lawn, beds of beautiful flowers, or masses of ornamental hardy shrubs, he must employ a gardener. Our object is to show that to change a place remarkable only for its want of beauty, into one that shall be a pleasure not only to its owner, but to the passers by, there is but little required that can not be done by the owner himself. That there are many excellent and most intelligent gardeners, we know as well as we do that there are a lot of pretenders and charlatans, who, by calling themselves gardeners, bring disrepute to an honorable profession. Unfortunately it is these fellows who perhaps can tell a lily from a hollyhock, that are most likely to offer their services to residents of rural districts, and by their assumption of knowledge and great pretensions, commend themselves to those who do not know that there are gardeners and gardeners. If one wishes to improve his place, and has not confidence in his own ability to make the best use of its natural features, let him avoid all pretenders, and carefully study his own grounds, and consider what he would have them to be in the future. If he has no taste in these matters, or has not given much thought to such subjects, it would be much more satisfactory in the end, to take the advice of some competent landscape gardener, who for a moderate fee, will make a sketch of the grounds, indicate how they may be improved, and lay out the work, showing the places for trees and shrubs, which the proprietor can carry out at his convenience. The adornment of a rural residence or farm yard, that we have in mind, is not such as will require the aid of a gardener in planting, or in keeping after it is once made. Any one who can manage a pasture, can make and keep a lawn, and whoever can properly set out an apple tree or currant bush, is able to properly treat an ornamental tree or shrub. The idea that the beautiful trees and shrubs that adorn the grounds of the wealthy, need some knowledge not possessed by the ordinary farmer, deters many who would gladly surround themselves with things of beauty. If such persons knew, what is the fact, that there are among trees and shrubs, a sufficient number as hardy as the commonest natives, to gratify the most exacting taste, we think that more would be induced to plant them. If one wishes to improve his place, let him begin at the entrance way; the road or pathway leading from the public road to the house, is that which is first noticed by

the visitor, and may be made to indicate the taste and refinement of the occupant of a farm house, as well as that of the millionaire's mansion. As no two places are exactly alike, so no two entrance ways will need to be treated the same. In the sketch, (figure 1), I have shown how a foot-path to a house situated some 200 feet from the public road, may be treated with pleasing effect. The tree at the left is a cut-leaved weeping birch, while the group of shrubs at the left, consists of Weigelas of different kinds, a perfectly hardy shrub continuing long in flower, and to be procured at a very moderate price. On the right is a Sycamore maple, and the bed at the right is planted with Remontant (Hybrid Perpetual) roses; but as these are in full flower only in spring, some fine double hollyhocks are intermingled, to give flowers later in the season. There is nothing here but what may be accomplished at a small expense, yet at the entrance to a house, no matter how humble it may be, will be unpretending, in good taste and effective. Between the entrance and the house, it is assumed there is an expanse of lawn, which may be broken or not, as the taste of the owner may decide, by occasional clumps of shrubs, or beds of flowers cut in the lawn; but an entrance thus decorated, may lead up through a plain, well kept lawn, to a house well ornamented with climbers, and be in good taste, without any intervening ornamentation. In the second sketch, (figure 2), I have shown how advantage may be taken of a natural eminence; it often occurs that there is a bold rocky prominence, which needs only a little labor to transform, what might otherwise be an unpleasant feature, into one of beauty. Upon a bluff of this kind is an appropriate place for a summer-house; if there are scattering rocks, they may be gathered here, and by placing earth among them, a foot-hold may be given to plants which will drape the rocks with verdure and flowers. In such situations our beautiful Virginia creeper will be seen to great advantage, as will the smaller leaved *Ampelopsis tricuspidata*, or *Veitchii*; the various hardy species of clematis will show with fine effect, and the grotesque forms of sedums and sempervivums, make themselves perfectly at home. Such an eminence may overlook a smooth pasture bounded by hills, or it may look out upon a sheet of water. But lakes are not for every one, while a level pasture is both beautiful and useful.

Fig. 1.—APPROACH TO A COUNTRY RESIDENCE.

The Basset Apple.

The Basset apple is one of those highly popular winter fruits, that one often comes upon in the State of Connecticut, so highly esteemed that the more widely known winter apples on the nursery lists have not been able to displace them. We received the sample from which the illustration was made, from W. D. Hall, of New Haven Co., Ct., one of the best fruit growers in the State. The Basset is a good deal cultivated in his vicinity, and is preferred by himself to all other winter apples. It belongs to the Pearmain family, and resembles the Cogswell apple in general appearance, except that it is smaller. The engravings on the next page are taken from a small specimen.

The size is about medium, roundish oblate, regular. Stem rather short, slender, inserted in a large russeted cavity. Calyx small, delicate, open, set in a rather shallow basin. Skin rich yellow, nearly covered with red, marked and streaked with bright red. Flesh white, compact, tender, juicy, scarcely sub-acid, with a rich refreshing flavor. Core small. Seeds rather small and delicate. Ripe December to February. A handsome dessert fruit of good quality. The tree is said to be a good bearer. It has never been sent out by the nurserymen.

The above comes from our correspondent, "Connecticut," who is not only a successful grower of choice fruit, but has long been a close observer, and has given especial attention to local and little known varieties. When a description of a new fruit comes to us, especially a new apple, we are in doubt whether to publish it or not. If published it adds one more to the upwards of 2,300 described apples, and if not published, we withhold information that may be of interest to many. The fact is, there are in every one of the older states scores, if not hundreds, of apples that have never been carried far from the neighborhood where they originated, and of which no record has ever been made. These in their own localities are held in high esteem, but whether they would be worth anything beyond there is quite unknown. While it seems a pity to ignore a variety quite as good, if not better than hundreds of those already in the books, it also seems injudicious to give a "local habitation and a name" to a fruit, while there are in the books hundreds quite as good, if not better. In conversation not long ago with well-known pomologists, Mr. Charles Downing, who was of the group, asked: "What shall we do with all these local varieties that are springing up everywhere in such numbers?" And it is, to editors, a very important question. Shall we refuse to notice a fruit that is not in some respects better for a given section of country, than any we now have, or shall we place on record every well marked variety of good quality? This accumulation of names has become a serious matter, and it is likely to increase as the love for fruit-culture extends. It seems to us that this is a subject worthy of the consideration of the American Pomological Society. These local varieties of fruit exist; they will, if "good" or only "fair," be disseminated in their own township, the county, or the State, and the question of Mr. Downing, "what shall we do with them," becomes yearly more pertinent, especially to editors.

Fig. 2.—THE USE OF A NATURAL BLUFF, OR ELEVATION.

THE COLORADO POTATO BEETLE, the genuine "bug" having appeared last year in parts of New Jersey, Pennsylvania, and in other Eastern localities not before visited, its appearance in full force may be looked for the coming season. The first beetles will come from chrysalids, which have been in the ground all winter. These will lay eggs, and the larvæ from these change to beetles in about a month; this first brood will produce a second, and that a third, which will remain in the ground to furnish a stock for 1876. The vitally important thing to do, is to watch for the first beetles with the appearance of the first potato tops, and not wait until the ravages of hordes call for active measures. Vigilance, whether they appeared last year or not, is the one essential thing. *Search, catch, and kill*, in the beginning. We will talk about poisons and other aids another time.

"Standing Cypress"—(*Gilia coronopifolia.*)

One of the most beautiful of all garden plants is *Gilia coronopifolia*, which is found in some catalogues as *Ipomopsis*, a name formerly given to it, but it not being distinct from Gilia, it is now united with that. From the general resemblance of both foliage and flowers to the well-known Cypress vine, (*Quamoclit vulgaris*), this has received the garden name of Standing Cypress. Though so beautiful, the plant is rarely seen in our gardens, for two reasons; one of these is, it is a biennial, and must be cultivated one whole year in order that its flowers may be enjoyed the next year. It is to be regretted that many really desirable plants are scarcely ever cultivated because they are biennials. We are generally an impatient people, and novices in flower gardening excel all others in inability to wait. Some of these dig up the seeds the next day after sowing them to see why they don't come up, and we cannot expect such persons to wait a whole year for anything. They want plants that will bloom right off and all the time, and after they have flowered all summer in the garden, they must be taken up and bloom all winter in the house. The idea that a plant has ways of its own that must be consulted, never enters their heads. Every considerable garden should have in some inconspicuous place a nursery bed in which seeds of biennials, and perennials also, can be sown, and the young plants cared for during one season; in the fall or the next spring the plants may be set where they are to bloom. Another reason for the infrequency of this *Gilia* is the difficulty of keeping the young plants through the winter. It is not the cold that destroys them—indeed, if much protected they are quite sure to die, but excessive moisture is fatal to them, and it is of little use to try them in a garden with a very damp soil. We have seen them kept very well when set upon a ridge, and if a dry place can be found near a fence, they are likely to do well there, as the fence not only breaks the force of driving storms, but the shade thus afforded prevents alternate freezing and thawing. The surest way is to keep the plants in pots; it is found that small plants winter better than large ones, and if the seeds are sown in August, they will be large enough by cold weather to place singly in small pots, which may be kept in a cool greenhouse or even in a frame. The plant usually grows about 3 feet high, but under favorable conditions it is 4 or 5 feet with finely divided, exceedingly delicate and handsome foliage. The flowers are borne in a long and narrow panicle at the upper part of the stem, or sometimes the flower-cluster branches, in which case the plant does not grow so tall. The flowers are about an inch and a half long, tubular, with five small lobes, of a light scarlet color with the throat and the inside of the lobes speckled with white or yellow. Some two or three years ago we mentioned the receipt of some specimens of the flowers of this *Gilia*, from Mr. P. J. Berckmans, Augusta, Ga., (who obtained them from a friend in Florida), which measured 2 and 3 inches across. Mr. B. procured some seeds of the plant producing these monstrous flowers, and sent us a portion of the seedlings. None of the plants produced unusually large flowers, but they had a greater tendency than usual to branch; on this account our engraving, made from one of these, shows a more branching habit than common. Aside from the brilliancy of its flowers and the attractive character of its foliage, the plant has the great merit of keeping in bloom for a long time. It is found from South Carolina to

STANDING CYPRESS.—(*Gilia coronopifolia.*)

BLUE-GUM.—(*Eucalyptus globulus.*)—(*See next page.*)

SECTION OF BASSET.

BASSET APPLE.

Florida and westward, and is the only species of *Gilia* in the Atlantic States, though in Texas and westward to California the species are numerous, and some of them of great beauty, though none are quite so showy as this.

The Atomizer in Horticulture.

A number of years ago, a contrivance for diffusing cologne-water or other perfumes in a fine spray, or rather mist, was introduced by some French perfumer. Later the apparatus found an application in surgery, for producing a local benumbing of the nerves, by use of the spray of ether, or other highly volatile liquids. After a while the implements were used in horticulture, for the application of insect destroying liquids to plants. The Atomizer, as it is called, requires a blast of air, which, on a small scale, may be furnished by the mouth, but is usually produced by the squeezing of an India-rubber bag, or by means of a bellows. We have figured contrivances, worked by both the bellows and bag, which have been found useful in the treatment of greenhouse and window plants, and also those in the open ground. The superiority of these over other forms of sprinklers, is that they supply the most minute quantities of liquids, and yet thoroughly bedew the plant. The Atomizers referred to, are rather too expensive for those who have need to use one but seldom. A very simple and cheap affair has been recently introduced by Messrs. B. K. Bliss & Sons, which is shown in the engraving. It is cheaply made of tin, and is operated by the breath, which is not laborious where one has but a few plants to treat. Tobacco or quassia tea, or whatever liquid is to be used, is placed in the reservoir, and by blowing through the horizontal tube, it will be thrown in an almost invisible spray upon the plants. Any one handy at such matters can make an Atomizer, although the one figured is so cheap, that there is little inducement to spend much time in making one. There is an upright tube which dips into the liquid, and a horizontal one through which the blast is sent. Blowing across the open end of the upright tube creates a vacuum in that, and the water rises, just as the wind blowing across the top of the chimney, causes an upward draft in the fire-place; the liquid that thus rises in the upright tube, is scattered in very fine particles, or atomized by the blast. The essential point is to have the top of the upright tube just half-way over the opening in the horizontal one. The accompanying engraving (fig. 2) shows how the writer extemporized an Atomizer, to replace a broken one. A large cork is cut as there shown, and two pieces of glass tube inserted at right angles. These fitting tightly in the holes of the cork, can be readily adjusted in the proper position. If a bottle is used for this, the cork should have a groove cut to admit air.

Fig. 1.—A CHEAP ATOMIZER.

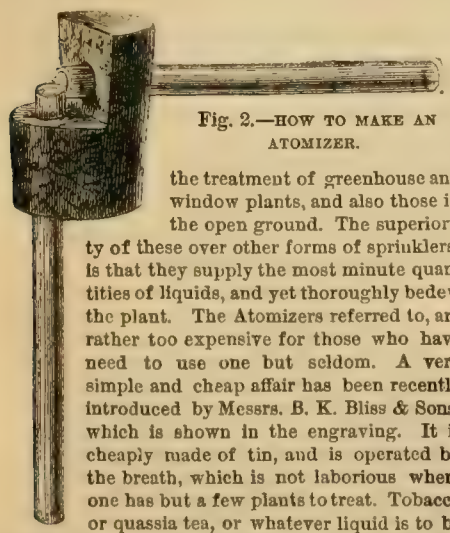


Fig. 2.—HOW TO MAKE AN ATOMIZER.

The Rotting of Celery.

BY PETER HENDERSON.

"J. C.," of Ogden City, U. T., wishes me to tell him, through the columns of the *Agriculturist*, why it is that his celery prematurely rots. It may be from several causes—some of which he may be, and others he may not be, able to control. The cause of decay that he may be unable to avert is, that by peculiarities of the season, a rank and succulent growth is made just before it is time to place away the celery in the trenches in the fall, and but a slight bruise given to the leaves or stems, when in that condition, will quickly cause decay. Another cause, and one from which even some of our most extensive market gardeners in New Jersey have suffered the past season is, that at the time of lifting the celery to put it away in the trenches, the ground was very dry, and so continued for some 3 or 4 weeks after, so that the celery in the trenches failed to start roots, it consequently wilted, and then began to decay, instead of starting to grow as it should have done, had the soil not been too dry. Now to avoid this cause of decay, as far as possible, immediately on digging up the celery, it should be at once set in the trenches, and the air as completely as may be excluded from the roots, so that they are kept moist enough at the bottom of the trench to emit roots. When the ground was suitable, I have allowed some of the soil to adhere to the roots of the celery on digging it, this prevents the wilting, and is perhaps the best plan if the time can be afforded, but it makes the work much slower, as almost every root requires to be handled separately, instead of three or four at once, which is the usual way in placing them in the trenches. Another cause of decay, and one of the most common, but one that ought to be avoided, is in digging too early, or covering up the trenches too soon. No date can be given as a rule for either of these operations. Each one must use his own judgment in the matter, keeping in mind that celery should never be lifted until there is danger of its being frozen; I do not mean a slight frost, such as 5 or 10° below the freezing point, for unless very soft indeed, even 10° will not injure it, but such a frost as would fasten it in the ground so that it could not be dug out. Freezing to this degree will kill it. There is no need usually for covering against frost until 3 or 4 weeks after it has been put away, and then the covering should be gradually applied, and of a kind that will lay lightly, such as leaves from the woods, or rough stable litter.

The Blue Gum—Eucalyptus globulus.

BY P. J. BERCKMANS, AUGUSTA, GA.

Every horticultural journal issued on this Continent has, during the past two years, repeatedly given notes on the species of *Eucalyptus*, but, if we may judge from the many inquiries which we receive from the Northern and Middle States, this genus has not been correctly brought before the average amateur tree planter. Last summer a New York paper, in mentioning the Blue-gum, *Eucalyptus globulus*, remarked that, as the trees are said to drive away musquitoes and fevers from their neighborhood, this desideratum is not to be overlooked by the inhabitants of New Jersey; to which a New Jersey paper replies, by recommending this tree for the flats of Long Island. From this it is evident that the character of the genus is misunderstood. The most important requisite, its hardiness, is ignored altogether, and as regards this, we would remark that neither the *Eucalyptus globulus*, (Blue-gum,) or any of the thirty or forty other species of the genus are hardy in Middle Georgia, consequently any experiments tending to acclimate these trees in New Jersey or New York must prove unsuccessful. Many kinds were cultivated in England as early as 1790, but every tree was killed during the winter of 1829. Since then the genus has been discarded in England from the list of hardy trees. Our first experiments were made in 1858, when we planted several species in a sheltered spot in the center of a large tract of wood. Among the lot were *E. pulverulenta*, *E. amygdalina*, *E. populifolia*, *E. saligna*, *E. floribunda*, *E. viminalis*, *E. elata*, and *E. globulus*. Their growth was very rapid during four or five years, except *E. amygdalina*, *saligna* and *viminalis*, which did not survive the first winter. In March, 1863, our last plant died; this was *E. pulverulenta*, which resisted the longest and showed more tenacity of life than any of the others, as it was killed to the ground several times and threw up new and vigorous shoots the following spring. The specimen had attained a hight of some twenty feet, when it finally gave up the attempt. In 1865 a particular friend and zealous amateur horticulturist sent us from North Australia some 15 species of *Eucalyptus*, which gave us opportunity to further test the relative hardiness of these newer species. During the spring of 1866 some forty plants of the different kinds were set out, but every one was killed outright by the first frost the following November. Again, in 1867, the experiment was repeated with the same results; this was sufficient to warrant us in foregoing any further attempt with this genus in this latitude, at least with the object of testing its value for timber trees.

It is well known that the influence of the sea-breeze has marked effects upon certain plants, thus many varieties of Figs, which seldom escape being more or less scorched by our winters when planted here in open field, remain perfectly uninjured near Norfolk, Va., when planted on the immediate sea-shore, although the thermometer there falls some 20 degrees lower than it does here. For this reason some of the Eucalypti will doubtless stand the winter several degrees further North, when having the full benefit of the sea breeze, than they will if planted inland. In the vicinity of Charleston, S. C., and Savannah, Ga., some species of Eucalyptus are reported as successful, but the plants are yet too young to prove their hardiness. I am, however, safe in saying that it is doubtful if any of the species will succeed in the Atlantic States, beyond the zone of the Orange; and further, that the narrow-leaved species are more tender than those with broader leaves. The success of our California friends with this genus as high as the 38th degree, must not lead us here to the belief that we can do likewise in a similar latitude in the Atlantic States. Although latitudes may be similar, the isothermal lines and hygrometric conditions are not.

It is much to be regretted that these trees can never be expected to grow in the Eastern and Middle States, so far as to make permanent plantations, but they, or at least some of them, may be made useful for ornamental purposes. The *Eucalyptus globulus* is perhaps the most desirable, as its growth, when planted in suitable ground, is remarkable. When young and in thrifty growth, its foliage is very luxuriant and of a bluish glaucous tint, hence its name of Blue-gum, but if stunted, it soon becomes rusty and unsightly. Young plants may be used in the same manner and for the same purposes as Cannas, Ferdinandas, Wigandias, Brugmansias, or other large-leaved ornamental plants, now so much appreciated in sub-tropical gardening. The seed should be sown in the fall, using seed-pans and covering very thinly; it germinates freely within a week, if fresh, and the plants must be potted off at once. If properly treated during winter, plants will be of sufficient size the following May or June, to be set in open ground, and by fall will have made a large growth, and give a fine effect in the flower garden.

If our fever and ague districts must for a while remain as they are, producing musquitoes and shakes, because of the impossibility of growing

the Eucalypti, at least these may be made to do duty as stately ornamental-leaved plants, and thus become useful. Our California friends are reaping good results from the introduction of these trees, but it is an unfortunate oversight in those who said so much in favor of this tree, not to have stated that it was not intended for New Jersey or New York, or even the Southern States above the Florida line, as great expectations have been ruthlessly destroyed, as well as the trees by our first fall frosts.

We should add that seeds of Eucalyptus are now easily procured from dealers in New York and California. An ounce of seed of *Eucalyptus globulus*, if fresh, will produce thousands of plants.

[The above bit of experience from Mr. Berckmans is very welcome, as it answers decisively a number who have made inquiries in regard to the Blue-gum. There has been much nonsense published about this tree, not only have the daily papers given the most absurd statements, but the agricultural and horticultural journals have done their share in keeping up the excitement. As to its alleged power of destroying malaria, we have not seen any evidence worthy of consideration. A tincture of its leaves, and other preparations from it, are said to be useful remedies in fever and ague, and that is probably all that there is about it. No fever destroying property is attributed to the tree in its native country. That the tree is of the greatest value in California is a well known fact, and it is likely to be the leading timber tree of that State, and the fact of its worthlessness on the Atlantic Coast is as well established as that of its value upon the Pacific. Mr. Berckmans' experiments, which we saw in progress, are corroborated by others in the Southern States, and the tree has utterly failed even in some parts of Florida. The suggestion to use the young trees for ornamental purposes is a good one; they have been so employed in Europe, and we give on page 101 an engraving from Alphand's work, to show the general appearance of a young and vigorous Blue-gum.—ED.]

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

Purifying the Blood.

Some persons actually read and believe the medical almanacs and advertisements of nostrums that flood the newspapers. How wisely they talk, these advertisements, about the necessity of purifying the blood; but they would lead the ignorant and credulous to suppose that the only way to get pure blood is to take doses of the particular kind of patent medicine advertised. Many respectable families take it for granted that some kind of spring medicine is necessary to set the human system in working order, as winter's cold gives way before the approach of warm weather: whereas it is only necessary for them to "cease to do evil and learn to do well" in their daily eating, drinking, breathing, working, and playing.

Persons who have learned and pay heed to the laws of health, find no necessity for spring medicines. They are all of the time purifying the blood by their simple daily habits. They aim to make their blood of good nourishing materials, and to "cleanse" it by pure air breathed into the lungs.

It seems to me more and more astonishing that the human body can stand so much abuse, especially in the way of bad air. People shut themselves into such close rooms in winter, especially at night, that it is no wonder that they are driven to all sorts of stimulants to whip up their flagging energies, and no wonder that they are "all run down" at the end of winter. One of the most common mistakes is the supposition that air is pure in proportion to its coldness, so that you have only to open a door into an unheated room, which is itself a reservoir of foul air perhaps, in order to ventilate sufficiently the living room or sleeping room. But the mistakes in diet alone are enough to account for the biliousness that prevails in early spring. A winter diet made largely of fat pork or of hot pancakes saturated with butter or fat, will pretty surely bring some sort of sickness in its wake.

The Need of Acids.

When much fat pork is eaten there will always be a demand for pickles or vinegar, says the report of the Massachusetts Board of Health. The demand for acid is a genuine call of the system, but there is no especial call for the strong acids, such as raw lemons and pickles, if one has from day to day the proper supply of moderately sour fruit. Half of the doctors would find their occupation gone if apples were freely used as an article of food. Fruit has never done us the good it might have done, because it has been eaten at improper hours, between meals, or in the evening. It has actually been turned into a foe to good digestion by the processes of pickling and preserving. The old-fashioned "pound for pound" preserves are too sweet to serve the purpose of acid fruit, and too rich to have the nourishing effect of juicy, sweet fruit. They are simply sweetmeats, to be eaten with caution. Canned fruit is excellent, but fresh fruit is best whenever it can be obtained. The good effect of fresh fruit is often spoiled by the excess of sugar used with it.

When there is a craving for sour food, for pickles or for lemons, it is generally a strong indication that the system has a real need of acids, and lemons or vinegar are sometimes the best medicine to cure biliousness and restore a failing appetite. A year ago I saw a child pass through one of these poor spells. He lost his appetite, and could not bear the sight or smell of food, until he caught sight of a dish of dried apple sauce, and then he was possessed with a desire for some of the juice. This seemed to refresh him, and he ate, for his next meal, bread soaked in the juice of stewed dried apples. After that canned tomato, cooked with bread, helped forward the cure. Before this ill turn, he had, for a few weeks, lived almost entirely without fruit, contrary to his usual habit.

It is a common mistake to use fruit at the table only in the form of sauce at the evening meal, or encased in rich crusts as pie for dinner. In the latter case the ill effect of the pie-crust is often greater than the good effect of the fruit inside the pie. As for the fruit sauce on the tea-table, it is better than a heavy supper of meat, but there is some sense in the old saying that "Fruit is golden in the morning, silver at noon, and lead at night."

Perhaps any kind of fruit or vegetable may be used to excess, or in too large a proportion as compared with the rest of the diet. Certainly acids should be used in moderation, especially the strong kinds. Because the juice of a lemon may be an excellent cure for biliousness or flatulence or other disease, it by no means follows that school girls can thrive upon their daily use. In former days, when pale and slender maidens were in fashion, it was not very uncommon for silly girls to try to reduce their weight and ruddy hue by frequent sips of vinegar, and many a feeble woman, and many an early death has been the result of such tampering. A variety of vegetables and fruit, well-cooked, and eaten as appetite calls for them, will satisfy the natural demand for both sour and sweet food.

Discouraged Mothers.

One of this numerous class writes me a letter. She can not get any *time* to devote to her children. Her little girls are almost entirely without a mother's care, she says, and her boy of nine is already almost lost to her. Society—which means the people congregated at the village store, if not the crowd in the bar-room, as well as the Sunday and the day school teachers and pupils—society has pretty much taken the education of her boy off from her hands, while she has been "slaving" at the dish-pan and wash-tub and sewing-machine in order to supply the most material wants of her family. She imagines that the case is quite different with me, and wishes to know how it is that I am able to keep house, educate my children, and write for the papers. I can not tell her "all about it," and I do not propose to invite the public to take a survey of my household, certainly not, while my hired girl, who has been away on a mission to the sick ones of her father's family, still delays her return beyond the fourth week of absence. I only aim to live along from day to day, while everything has a tendency to "gig back" to original chaos. While I am trying to bring one end up even, several others are falling behind. Every morning I have to begin with a determination to try above all things to be cheerful and contented with the little that I can accomplish. Nature alone is not equal to the task, and I often fail sadly. My correspondent writes she imagines that I read a good deal. This is not the case. I read very few books, but by keeping reading matter lying all around the house, I fill in some odd minutes; here a little of one thing, and there a little of another. I dare not begin a novel or long story, much as I desire to read "Middlemarch," and to finish "The Newcombs," begun ten years ago. Let us be thankful for the serial stories in the papers and magazines, for we may surely take time to read the few chapters that come to us each week or each month. Reading them in this way, by regular installments, we are not likely to make novel-reading a dissipation, and in such reading we may find not only rest for a wearied mind, but help for our manners and general conduct of life, provided, of course, that the stories we read are such representations of life as win us to seek noble living. I bless the good writers of good fiction, and I know that my present life is made pleasant in part by the companionship of the heroes and heroines who act their parts before me from week to week, as I follow the fictions (often the truest truth in a higher sense) of the best story writers in our papers. Sometimes there comes a sort of lull in our busy lives when a serious book gets a chance to be read through; and books that are in the line of our daily study and work will somehow get read, simply by consultation on different points, perhaps. A mind eager for knowledge will manage to pick up supplies somehow, if there is any nutriment of this kind near at hand. I write all this because my correspondent mourns that mothers, who are also housekeepers and hard workers, cannot get time to read. Besides, let me tell her, a change must come some time. These babies will not be babies always. Then, let us hope, there will be some opportunity for us to indulge our literary and artistic tastes. In the meantime, let us enjoy these babies who will not always be babies. There is nothing in art so wonderful and so beautiful as a living child. Your own boy is as funny as William Henry, if you use your eyes and ears and *heart* to discover it, as Mrs. Diaz uses her's.

So all the advice I can give to weary and disheartened mothers is, hold on as best you can. Be sure that it is *best* as it is, till something better comes. *Make* the best of it anyhow. Go to bed early whether the clothes are all mended or not. For your children's sake as well as for your own, get plenty of sleep. And pray the prayer of faith.

More about Milk for Babes.

In experimenting with young babes, who are deprived of mother's milk, or who are weaned early, it may be best to run the risk of having the mixture of milk and water a little too rich rather than too much diluted at first. If the milk is too rich, it will be thrown up from the stomach, which will serve as a hint for more water in the mixture; but if it is too poor and thin, there may be no clear sign (to unpractised eyes) of the fact, until the infant has been considerably injured by gradual starvation, or until obscure and troublesome diseases have been induced. It is further said that if the milk is too strong, indigestion will follow and the child will be injured in health. When particles of curd pass unaltered through the bowels, a milder or lower grade of food should be given. If there is constipation, put in more cream or increase the richness of the milk. Cow's milk has a larger proportion of casein, or cheese, than mother's milk, and to make the proportions of cow's milk right for a young babe, in this respect, the milk should be diluted until it is eighteen parts water to ten parts milk. This would not nourish the babe properly, however, as there would be too little but

ter in the mixture and too little sugar. For this reason it is recommended to set aside a quantity of milk, and after four or five hours remove the upper third, which is said to contain fifty per cent more of butter than the ordinary milk of the cow. This

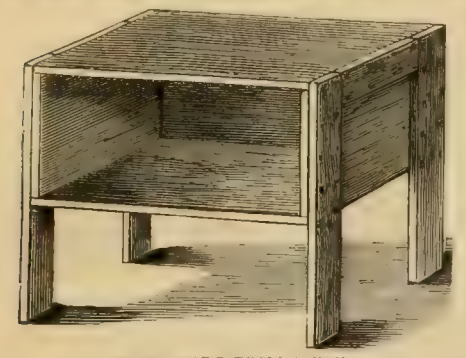


TABLE MADE FROM A BOX.

use for the infant's food. The "strippings" (or the last pint milked from the cow, kept separate from the rest,) would answer the same purpose. There should be even a large proportion of cream (or the butter of the milk) in the food of the babe during the first two weeks, beginning with the use of the upper eighth of the milk set to rise. At first there should be used only about a third as much of this creamy milk as there is of water, which should be very pure and *soft*. For sweetening, loaf sugar is recommended, in the proportion of a teaspoonful to a quart. Too much sweetening will cloy the appetite and injure the digestion. The milk should be heated by putting the bottle in warm water. One hundred degrees Fahrenheit is the proper temperature, but the cheek will be a sufficient test after the first experiment.

A Table Easily Made.

Take a wooden box that has sides of a convenient size for the desired table, and choose one of its sides for the top of your table. Get four narrow pieces of board, (flooring or siding will answer if strong enough), as long as the desired hight of your table. Nail these at the four corners of the table, two on each end. Then nail pieces of the same kind of board across each end of the box, (at the top of your table when set up), filling out the space between the legs, so that the ends of the table may have straight sides and even corners. Set it upon its legs and you have a table with a shelf underneath. Cover it with a large table cover, or drape it with calico or muslin and cushion the top like a toilet table. Such a table is very convenient sometimes in a sleeping-room, where more closet room is needed. I have one that serves me well for a place in which to keep extra bed-covers.

An Adjustable Table.

While the sewing-machine saves work, it also makes work, and the labor of cutting, basting, and preparing the articles for the machine is one for which various aids have been contrived. Ordinary

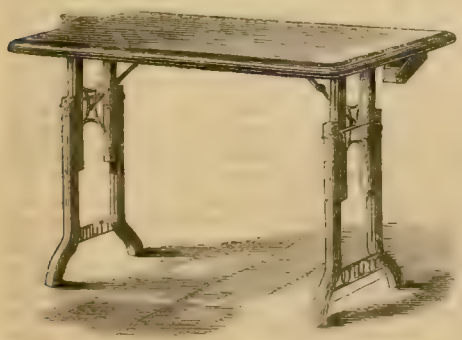


Fig. 1.—"UTILITY" TABLE AT HALF HIGHT.

tables are much too high for sitting at work, and lap-boards, with and without legs, are much in use, but the inconvenience of these is manifest if one has to rise frequently while at work. Recently what is called the Utility Adjustable table, made by Lambie, Sargent & Co., N. Y., has been brought to our notice, which appears to be so useful an affair that we wonder why it, or something like it, has not been made before. It is essentially a strong table which can be at once changed from 22½ inches to 28½ inches high, with two intermediate points of 24½ and 26½ inches, at which it may be adjusted. When not in use, the table if desired, may be folded up and set away, taking up but little more room than a lap-board. The tables are made in various styles, from those with a white-wood top stained to resemble black-walnut, to the more elegant ones of rose-wood and black-walnut, but in all the mechanism is the same; this is simple, strong, and effective, and will be understood by reference to the illustrations, where fig. 1 shows the table at about half its full hight, and fig. 2 the underside of the table as folded for placing away or for transportation. The legs are hinged to cleats on the underside of the top and are united in pairs. When set up, a brace with a hinged joint, one end of which is fast to the top and the other to the legs, keeps the whole perfectly firm. Each leg consists of an outer and an inner section, the former sliding against the other. The table being in the position in fig. 1, is raised to a higher point by merely lifting the top. By means of a clevis or clamp on each leg, which catches against a small iron knob, the top is held at the required hight. These clevises are ingeniously self-acting, and allow the table to be adjusted with great ease. The legs are remarkably strong, being made of 20 layers of wood glued together and bent

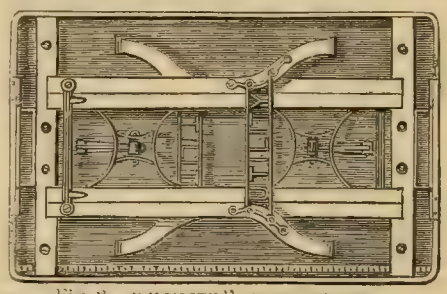


Fig. 2.—"UTILITY" TABLE FOLDED.

into shape. As convenient accessories, there are a yard-stick beneath the top, (shown in fig. 2), that can be taken out and replaced without trouble, and a small drawer at each end of the table to hold spools and other small articles. While intended primarily for a lady's work-table, the inventors properly suggest that many other uses may be found for it, especially as a reading or study table for small children, and it would be a very useful affair for the bedside of an invalid. One of our associates informs us that he has such a table, and finds that its usefulness is by no means confined to the ladies of the house.

More Celery Wanted.—Cooking It.

We have often had occasion to state that the table of a mechanic, or day-laborer in a large city, presents a greater variety than does that of many a wealthy farmer. Take celery, for instance, used by almost every one in the cities, while comparatively few tables in country or village are ever supplied with it. Celery is an excellent addition to any dinner-table, and were its merits, and the ease with which it is cultivated, generally known, it would be in quite as common use as beets. At the proper season we will, as usual, give directions for growing it. It is most commonly used raw, and eaten with a little salt. It is a delicious relish thus eaten, but it makes an excellent dish when cooked. At the better class of restaurants, it is not rare to find on the bill of fare, Cream of Celery. A bowl of this, eaten with bread or crackers, is a delicious and nutritious lunch, with nothing else. This cream of celery is a diluted form of purée of celery, used as a sauce for game. It is made by cutting white celery fine, and stewing with a little water, pepper, and salt, in a covered dish, until it will form a pulp, then milk is added, or three parts milk and one of cream, boil for a few minutes, and pass through a sieve, rubbing through all but the coarser parts of the celery. Heating again, and thickening with a little flour, stirred up with cold milk. If milk is used without cream, then butter may be added. At home, besides the above method, we more frequently cut it in pieces, cook it soft in water, pour off the water, and add abundance of sauce, made of cream and a little flour, or drawn butter when cream happens to be scarce.

Another Use for Old Cans.

In January last a number of illustrations were given of the ways of utilizing fruit cans that have been emptied. It seems that the subject was not exhausted, as a correspondent, whose name we have mislaid, sends us a sketch to show how a neat little window basket may be made from one of these cans. The sides of the can are cut down to within an inch of the bottom in strips (fig. 1) as wide as one fancies. The tin of which the cans are made is rather thin, and may usually be cut without difficulty with a pair of strong common shears. A ring of stout wire being provided of the size desired for the top of the basket, the end of each of the strips is turned over it, placing these at equal distances apart, as shown in fig. 2. It should be painted brown, or some neutral color, and we may here add, that boxes, baskets, etc., to contain plants or stakes or trellises to which to train them, though almost always painted green, are in much better taste when of some unobtrusive color. The beauty of the brightest foliage is quite destroyed when seen in contrast with a box or basket of a window-blind green. Of course wires will be provided to hang the basket, and if it be lined with moss, any suitable window-plants may be planted in it. It does not need expensive plants to fill a little window-basket. One of the most interesting things of the kind we ever saw was filled with a few clumps from the woods of moss, the leaf-mold beneath the moss and the plants that naturally grow in such places, chief among which was the little partridge-berry or twin-berry (*Mitchella*), a bit or two of Prince's Pine or Pipsissewa, and a few other humble evergreens.

Fig. 1.

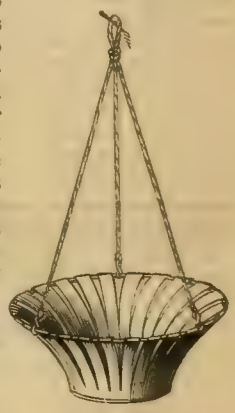


Fig. 2.

Some Questions in Etiquette.

A lady writing from Newburgh, N. Y., says: "Several questions have puzzled me of late, and I write to ask you if you thought it worth while to answer them. 1st. Last summer a lady from the city was staying a few weeks with us; she begged to have her coffee in 'the small cups,' teacups, the large cups were only used in her kitchen at home. Please tell me if small cups only are fashionable.... 2d. A friend of intelligence, culture, and refinement visiting us a few days, stopped after she had risen from her chair at the table, and took her spoon from the saucer, where we thought it ought to be left, and placed it in the cup, now can you tell me the right of this matter? It was a new idea to us. ....3rd. In leaving the table, should the chair be left where it is when the person rises, placed under the table, or set back?"

To answer the first question, we may say that the "lady from the city" was guilty of a gross breach of good manners. Persons visit for a double object: one, to please themselves, and the other to give pleasure to those they visit. The way to give pleasure to those we visit, is to adapt ourselves to

their ways, and to accept their mode of life without the slightest hint that it might be different. If persons can not leave their own home behind them when they visit, they had better stay at home. We can conceive of nothing more rude than for a visi-

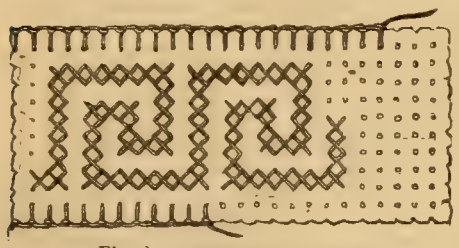


Fig. 2.—ROMAN-KEY PATTERN.

tor to ask for a change in the table arrangements, or to suggest that she has things different at home. If there is such a thing as a female "snob," that "lady from the city" is one. As to the question of cups, where coffee is taken at breakfast, large cups are in general use, and it is only for after dinner coffee, which is served very strong, either at the table as the last thing, or in the drawing-room after the company have left the table, that small cups are "fashionable." In this case the coffee is taken semi-medicinally to relieve the sense of fullness that is often experienced after a hearty meal. We have now reference to those who live in what is called "style." The great majority of people do not have coffee after dinner.....To answer the second question. We think there is no regular rule with regard to leaving the spoon. We have heard that in old times placing the spoon in the saucer, was an indication that another cup of tea was desired. Common sense would dictate to leave it where it was last placed. That there is any prescribed method of leaving the spoon, is as to you, "a new idea" to us.....3d. The remark about conforming one's self to the ways of the family visited, applies here. Where there are waiters, it is customary to leave the chair as it is when the person rises from it. Any sensible person in visiting will note what is done by the family and do the same. All matters of etiquette should be founded upon common sense and kindly regard for others, and the putting on of airs, and telling how differently they do at home, shows that visitors who do this have not learned the first principles of good breeding.

Fig. 3.—CATCH-ALL.

BOYS & GIRLS' COLUMNS.

A Regatta on Ice.

Did you ever see an ice-boat? Not a boat that carries ice, but one that sails on the ice. It is made with iron runners much like skate runners, of course placed so it will not readily upset, and the hull or body of the boat is a mere frame work, made as light as possible and yet be strong enough. These boats have rudders and masts, and spread a great deal of sail. With smooth ice and a good wind, how they go! At some of the towns upon the Hudson River, the people use ice-boats a great deal. The river is a very wide one in most parts, and it keeps frozen for a long time, and is a particularly good place for such boats, which are used to go from place to place or for pleasure sailing, and sometimes they have races, or regattas, which, by the way, is an Italian word, now much used for a public boat-race of any kind. It is very exciting to see several of the large boats of this kind skim over the ice with the swiftness of the wind—whew, how they fly! The sport is not free from danger, as a weak spot in the ice, or running foul of some obstacle, makes a sad wreck. The boys in the picture have evidently seen a race of this kind, and are amusing themselves with a regatta of their own, and though their *sails* are not of the most approved style, we have no doubt they are enjoying themselves quite as much as the owners of the larger and faster crafts.

THE BOYS' REGATTA.

Aunt Sue's Chats.

JAMES D. O.—Perhaps you did not enclose a postage-stamp. When writing to any one for information, which is entirely for your own benefit, it is highly impolite not to enclose a stamp for the reply.

ALICE wants to know what "Whitby Jet" is, whether Whitby is "the man's name who makes it." No, dear; Whitby is a district of Yorkshire, England, and the jet is found enclosed in lumps of clay. It is a kind of coal. But jet is also found on the Continent of Europe. The Whitby jet is often imitated with what is called ebonite, or vulcanite, which is a very tough material prepared from India-rubber; black glass is used as an imitation of jet, and compounds of other kinds are made to resemble it.

F. M. S.—I never "saw a shooting fish," but I have heard of him. It is a native of the West Indies. The fish has a hollow, cylindrical beak. It derives its name from the curious manner in which it procures its food. When it sees a fly, or any other insect, which it fancies for dinner, sitting on a leaf, or sailing upon a chip, the fish swims away to a proper distance, and then, with amazing cleverness and dexterity, he ejects from his tube-like mouth a drop of water, which is so well directed and so swiftly shot forth, that it never fails to knock the insect into the water, and the fish darts upon its prey and eagerly devours it: another instance of the diversified modes in which creatures procure their food.

How to Make a Catch-all.

Some clever person has contrived a use for broken goblets. They were so popular near last Christmas, that crockery stores were besieged for broken goblets, and when none were left, it is hinted that some store-keepers were so obliging as to break them on purpose. Here you have a picture of the fractured article—the bowl and the foot. Of course you all know how to make a pincushion of the base of the glass; and now I am going to tell you how to utilize the upper part. Take a strip of silver perforated card-board, nine holes deep, (cutting it through the first and eleventh row of holes). Measure the top of the goblet, and allow the strip to lap over one or two holes. Fit it snugly. Now work upon the card-board, in any colored worsted you like, the "Roman key," (fig. 2,) or any other pattern you choose. When worked, join the ends, leaving the card in the form of a hoop, which goes snugly over the top of the tumbler. Then take it off, and button-hole each edge of the hoop with the

Fig. 1.—MATERIALS FOR CATCH-ALL.

worsted. Crochet through the lower row of button-hole stitches, narrowing at each side, every round, until tapered down to a point. Then crochet an edging in the upper row of button-holeing, which must stand up beyond the edge of the glass. Make a little tassel of worsted and fasten it to the point. Now crochet a strip for a handle, about six and a half fingers long; put a tassel on each end. Fasten one end on to the perforated card-board just over the joined end, allowing the tassel to fall just below the lower edge of the card-board; then fasten the other end of the strip exactly opposite. It is now ready to receive the glass, and will appear as in fig. 3. Hang it up by your bureau or some other convenient place, and you will find it very handy to receive burnt matches, bits of thread, paper, etc. It has one advantage over most reservoirs of the kind, as when emptied you can wash the glass and make it as sweet and clean as ever.

More About Puzzle Pictures.

The picture No. 440, given in Nov. last, was so very easy, that we did not think that any one could help finding it out, and we are quite surprised that some have written us, asking for an explanation. There are two principal kinds of puzzle pictures: one in which the concealed view, or the puzzle portion, can only be seen by turning the picture, so that it will be bottom up, or so that one side or the other will be top; and another, in which certain strong lines first catch the eye and prevent it from seeing the puzzle part, which is less conspicuous. In the Nov. picture you have only to turn it so that the right hand side of the page will be the top, and you will at once see that what before looked like a bridge is a straw-hat with a broad band around it; the road becomes a vest, and the face of a man beneath the hat is made up of ——, but we will let you have the fun of finding that out, and you will see that the artist who drew it showed no little ingenuity in working out the parts. "Jack's Garden" last month needs to be turned in a similar manner, when the hot-beds become the windows to "The House that Jack Built," and all the other parts, when seen in that position, appear quite different from what they did before. Of the other class of pictures,

No. 442.—PUZZLE PICTURE—A FARM SCENE.

no turning or change of position is required; the artist cunningly leading the eye away from that which but for this trick of his might be readily seen. Let us show you how readily the eye may be deceived. Look at the simple diagram fig. 1, and see whether the upright lines are parallel or not—no doubt most of you

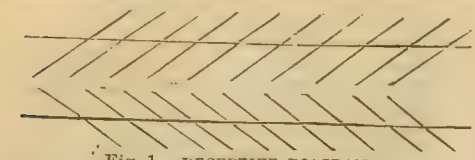


Fig. 1.—DECEPTIVE DIAGRAM.

will say that they are farther apart at the top than at the bottom. There is another way in which we showed this seven years ago, but the boys and girls who saw it then, are young men and women now, so we will use it again as fig. 2, to illustrate this matter. Which of those two parts of circles is the larger? You will very likely say the lower one. Measure it, or what is better, take a thin piece of paper and draw the outline of one, then place this over the other, and tell us how much the difference is. There

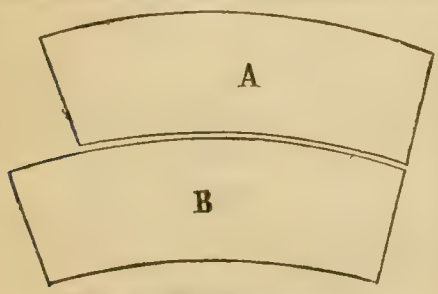


Fig. 2.—WHICH IS THE LARGER?

are other ways in which the untrustworthiness of the eyes may be shown, but these will illustrate the fact that things are not always as they seem. We give you one more puzzle picture, and allow you to find out for yourselves to which class it belongs.

A Look at Some March Flowers.

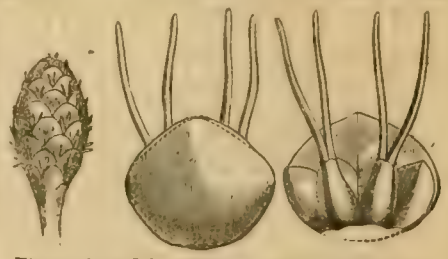
Of course the boys and girls who live in the Southern States, and those upon the Pacific coast, have not been watching day after day to see the snow disappear, as have those who live in the colder parts of the country. Our children are scattered so far north, south, east, and west, that when I make a talk that is seasonable for one part, it is too late or too early for another. If we talk about March as it is all north of Virginia, we shall only recall what happened to the boys and girls south of that a month or more earlier. Yes; you in Georgia and California, and such places, have had your spring, while you in Florida and Texas hardly know when winter ends and spring begins. Well, you of course know that in the Northern States the snow must go before the flowers will come. And the very first flowers of spring seem much more precious than the later ones; we only find one here and there, while later they abound everywhere. If I were to ask you, master, or miss, which is the earliest wild native spring flower, what would you say? No doubt many would answer the Snow-drop, as they have read of that blooming through the snow. But that is not wild in this country, and is only to be found in gardens. There is the beautiful May-flower, or Trailing Arbutus, which is some seasons very early, but there is something earlier than that, for in years when the Trail-

Fig. 1.—ALDER FLOWERS.

ing Arbutus is early, my plant is still earlier. Earlier than the little "Whitlow-grass," which is not a grass, or the small Saxifrage on the dry hills. Earlier than anything I can think of except the Chickweed, which will bloom whenever the snow melts in winter and allows the sun to fall full upon a patch of it, then its little white stars will open as smilingly as if they were not to be frozen solid the next day. But although the Chickweed is so common, it does not belong here, but is a stranger, though so thoroughly at home that you would hardly suspect it. The earliest native flower that I can think of is the Alder. You all, or at least all of you who live in the country, know the Alder, which is so common on the banks of streams, where it forms thick clumps. Every boy who has been a fishing knows the deep holes shaded by alder bushes, where he is pretty sure to get a bite. I say that the Alder is the earliest, but the Hazel nuts come close to it, but where I live the Alder is just a little ahead. Now if any of you know of any plant in the Northern States that opens its flowers earlier in spring than the Alder, I wish you would tell me what it is. I don't mean to say there is none, only I don't think of any. You "did not know that the Alder had flowers?"—well, that is what I supposed. I have known many who were not boys and girls, but men and women, who had lived among trees all their lives, who did not know that the oaks and hickories, the alders and hazels, and many other trees and shrubs bore flowers. No flowers! why, what do you call those clusters swinging in the March wind upon every Alder-bush long before the leaves come out? "Oh, those are tags."—Yes I know that is the name by which they are called in many places, but they are really flowers. You think that they are not flowers because they are not bright and showy, but while many flowers are of the most beautiful forms and colors, there are many on very beautiful plants that make scarcely any show. You must remember one thing, that the use of the flower, all that it is made for, is to form seed from which other plants may grow, and if it is best for the flower to be bright and gay it is so, and we admire it and say "beautiful," "lovely," but if the flower can do its work just as well in drab or sad colored clothes, as these of the Alder, we may not say "lovely," but we can say "beautiful," because it is doing its duty and serving the purpose for which the Creator designed it. Now, the reason I called your attention to these early March flowers of the Alder, is that you may see how beautifully they are arranged for their work—that of seed-making. You all recollect how a lily looks, as that is such a large flower and so showy that if seen once will always be remembered. You recollect there are first the leaves of the flower, (*petals* is the proper name), those that are so pure in the white lily, and so gay in others. Just inside of these are six slender stalks, each with a little pouch or case at its top that dusts out a dark colored or yellow powder, which shakes off upon your clothes or gets upon your nose if you smell too closely of the lily. These are the *stamens*, the powder is *pollen*, and the little cases that hold, or rather shed the pollen, are the *anthers*. Right in the middle of the lily is a stouter stalk than those of the stamens, with a sort of knob on top and a larger bulging portion at the bottom, which after the rest of the flower falls away becomes the seed pod. This bulging part is called the *ovary*, the stalk the *style*, and the knob at the top the *stigma*, and altogether the *pistil*. Now, the curious thing about it

Figs. 2 and 3.—SCALE OF ALDER TASSEL.

is, that unless the pollen of this or some other lily falls upon the stigma, the ovary will have no seeds. It has when the flower blooms the beginning of seeds, but unless these are made to grow by the pollen, they will come to nothing. Now the pistil is a very important part of the flower, and so is the stamen or its anther that produces the pollen. These are present in some form or other in every flowering plant, sometimes as in the lily, both kinds in one flower, but sometimes the stamens are in one flower and the pistil or pistils in another. Our Alder tags look very unlike lilies, but let us see if these seed-making parts are there. In figure 1, *a*, you see some Alder "tags" as you call them, but botanists call them *aments*. They look something like caterpillars. Examine them closely and you will see that they are made of separate parts upon a slender stem. Each one, as you look at it, especially if you have a magnifier, is a sort of scale like figure 2; pull off one carefully and turn it over, look at it with a glass, and see three little flowers under each scale, one of which is seen very plainly in figure 3, with its four stamens. So each tag or ament has a great many flowers. But you do not see the pistils; you must look in other flowers for those. See at *b* in figure 1, the little cones that very few people notice; these too are made of scales, but closer together than the others; in figure 4 you have one magnified, and you can see the little thread-like styles sticking out from under the scales. Cut the cone apart, each scale will be like figure 5 on the outside, but turn it over as in figure 6, and you will see two ovaries, each with two styles. So you see the stamens and pistils are far apart, but as the March wind shakes the "tags" the pollen is quite sure to get carried to the pistils, and then each ovary grows to form a little nut with one seed in it. The scales of this cone grow too, and become thick, as in figure 8. You will probably find old ones upon the bush



Figs. 4, 5, and 6.—FERTILE CONE AND SCALES.

from which the nuts have fallen, but if you take one when ripe in the fall and cut it apart, you will find beneath each scale, now very thick and woody, as in figure 7, a couple of little nuts, like that shown at *a*. Now, I think that with the help of these figures and this description, you will be able to see that the Alder has flowers, and very interesting ones, too. I wish you to notice that flowers all have the same work to do, to produce seeds, that the stamens and pistils are the parts engaged in doing this, and all the rest of the flower is of comparatively little importance, and that while the forms of flowers are wonderfully varied, the same general plan runs through all. When you are taking your rambles, do not notice the showy flowers only, for there are many quite as unpretending as the Alder that will be found on close acquaintance to be quite as interesting as their more brilliant sisters. Later, when the birches hang out their tags you will find that their flowers are arranged very much like those of the Alder. The hazel aments, while they at first sight appear much like those of the Alder, will on examination prove quite different, but I have not time to point out what the difference is.

Figs. 7 and 8.—CONE AND NUT.

THE DOCTOR.

How Jamie Carried a Whole Barrel of Apples.

Jamie, though only 11 years old, is quite strong for his age, for with a "square hold" he can lift 100 pounds. Still, with all his strength, he was quite confounded the other day when his mother said, "Jamie, there is a barrel of apples up stairs, and I want you to take it down cellar; it is coming cold, and the apples will freeze if left there."—"Why, mother, I can't do it," he answered.—"Oh, I am sure you can if you try," was the reply.—"But," he said, "it will break my back to try." His mother told him that she would not ask him to do anything impossible, and that she hoped he would never say "no" to anything but to a temptation to do a wrong or mean thing. Jamie went up to where the barrel of apples was, and looked at it, then he moved it a little way, and then tried to lift it, but try as he might he could not raise the edge of the barrel from the floor. Then he sat down and thought over the matter; here were the apples, and they must go down cellar, and he was to do it, but *how* to do it was what puzzled him. Just then a basket—a peck basket—caught his eye, and the puzzle was solved. He took the basket, filled it with apples, and carried it to the cellar; there he took the apples out, laying them on some boards, handling so carefully all the while as not to bruise any, and then went back for another basketful. After working industriously for a while he had the great satisfaction of seeing the bottom of the barrel, and he thought it was the best looking part of the barrel; then it was but short work to take down the empty barrel and place the apples back into it. "I've done it, mamma, I've done it; I have taken the whole barrel of apples from the garret to the cellar."—"I knew you could when I sent you to study this lesson," said his mother. "Lesson! what lesson!" But instead of telling him, she preferred to let him find out for himself. Jamie at first thought his mother wished to teach him to contrive a way out of difficulties, or not to be scared at what seemed an impossibility. These lessons, though important, were not what his mother had in mind. You may be sure that Jamie went to bed tired that night, but after he was supposed to be sleeping soundly, he called out: "Mamma, I've got it. I know why you set me at that barrel of

apples. I've got a barrel full of bad habits that I have been carrying around all this time. I've wanted to get them out of the garret of my head, and put them in the cellar, under my feet, and I've looked at it, but the job was too big. Now I am going to try carrying *a peck at a time*. To-morrow I'm going to take that bad temper of mine and pitch it into the cellar where it belongs. Whenever the anger comes I'll pitch it down quick. If I do this every day, I guess in this new year I can put the barrelful of bad temper, bad thoughts, and angry feeling all down. Mamma, don't you think if I pray every time these bad feelings come, that God will help me and give me strength to get rid of them?"—"Yes, my dear child. He never turns away any who ask him, and Jesus said 'Ask and it shall be given.' After a while you can take a little basket in *each* hand, that is two or three faults, found out and taken down, but *begin* with a peck at a time and you will soon grow stronger and more able to contend against bad habits and bad manners." Jamie went to sleep feeling quite happy, and in the morning when he got up he prayed earnestly. He had not been up an hour before his brother George did something that displeased him, and he began to get angry. Instead of speaking cross to his brother, he said to himself, "here is this barrel already open, but God will help me to conquer this fault; here goes down one peck from my barrel," and he turned around and spoke so kindly to his brother that he, expecting an angry reply, wondered what it all meant. But we cannot follow Jamie's attempts to get rid of his barrel of faults—one peck at a time. It need only to be said that he kept trying, and "as a soft answer turneth away wrath," he so treated George that his temper was softened and his selfishness abased, and he too began to put down his faults one peck at a time, and the two brothers from quarreling became loving. It may be that some boy or girl who reads this can see that the effect of Jamie's example need not be limited to his brother George, and may be encouraged to try to empty that barrelful of bad habits, *a peck at a time*.

Should Boys go to College?

FARMERS' BOYS AND OTHER BOYS. *Editor of the Agriculturist*—DEAR SIR:—My friend Sammy and myself have had a great deal of talk about going to College. Father says, that as I am to be a farmer, going to College will do me no good. Sammy's father is a mechanic, and says the same about his son. Knowing that you have been to college, and know all about college matters, it was agreed between us that I should write to you for your opinion, as that would go a great ways with both our fathers.

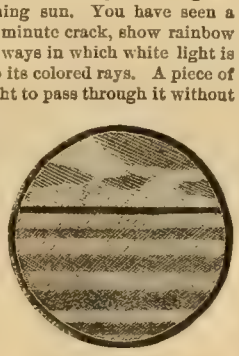
Very truly, MARTIN.

We'll try. For short, we would say, every boy *ought* to go to College, and we came pretty near adding, every girl too, but we will only say that the girls ought to have for themselves what would be equivalent to College for the boys. But what is a College? Why, it is only a high *School*, where the students go beyond what is usually studied in the High Schools, Academies, and Seminaries. The Colleges have a regular thorough course of study. They require a certain amount of previous advancement to be able to enter them, and the students go through a Freshman year, a Sophomore year, a Junior year, and a Senior year, and if they pass all the examinations, they receive a Diploma conferring the degree of "Bachelor of Arts," (A. B.) Usually, if they study or follow literary pursuits for three years after leaving college, they get another degree of "Master of Arts," (A. M.) The college study is very thorough, (or ought to be,) and the young men are trained not only in the higher studies, but in writing and speaking, while the association with the professors (teachers) and others, all of whom are well educated, tends to refine and cultivate their minds. Most of the colleges require (and all ought to) much time to be spent in studying Latin, Greek, and the higher mathematics, such as Algebra, Geometry, Trigometry, Calculus, etc., also Chemistry, Mineralogy, Geology, Astronomy, Botany, Moral Philosophy, Moral and Political Economy, Logic, etc.

But "stop, stop," we hear our young friends Martin and Sammy say. "What's the use of all this to farmer boys and mechanics?"—Well, a great deal more than we can tell you in this short article. While these various branches of knowledge will do a great deal to make one happy in any station of life, the STUDYING of them is of vastly more importance. By this we mean the *training*, the *discipline* of the mind one gets while digging at the hard studies, will be of incalculable value. The natural mind is like a young colt, when first put in harness. It jumps here and there, frets, fumes, and does little work. Drive it awhile in the harness with a broken horse, and in it time settles down to steady effective work. Boys, (and most men too), know how hard it is to concentrate their thoughts upon a subject, to take it up and carefully look upon all sides of it, and come to a right decision. The severe training of a college course gives just the *discipline* of mind that is very useful, whether one is a farmer, a mechanic, a merchant, or anything else. If the boy of 16 has 34 years to live and work in any pursuit, he will accomplish more in the end, if he devote 7 or even 10 years' to disciplining his mind and *getting ready* to work EFFECTIVELY during the remaining 24 or 27 years, than if he did half work during the whole 34 years. Some folks send their "smart boys" to College, and keep their dull ones at work. This is cruel injustice. If Nature has done less for a boy, it is not his fault, and he should have all the more chance to make up natural deficiencies by more severe training and development of what he has. Many years of observation lead us to believe that the naturally dull boys are most benefitted by college study, and on the average they make the most successful men. The bright boys get their lessons easily, and thus lose the habits of *patient application* to hard work which are developed in those of more obtuse natural faculties, and as a consequence the latter become best prepared for life's struggles; they are less appaled by difficulties, and very often come out ahead in the long run. We may say more on this subject another time.

The Doctor's Talks—Blowing Soap-Bubbles.

It is time that we finished the soap-bubble talk, because there are other things that some of you have asked about and these wait for an answer. I was to say something about the beautiful colors seen upon a soap-bubble, and there are few things more difficult than this to explain. To tell you what is known about it would make a very long story, and it would be so difficult to understand that few would read it. Still there are some things about it that will interest you. Did you ever see the image formed when sunlight passes through a three-sided piece of glass, such as the drops to some lamps and chandeliers?—This image is a beautiful sight, just a little bit of rainbow, with all its colors. By the use of a three-sided glass made for the purpose, called a *prism*, a large and fine *spectrum*, as this bit of rainbow is named, may be shown. The use of the prism has very plainly shown that the light of the sun is made up of seven different kinds of light. There are red, orange, yellow, green, blue, indigo, and violet lights or rays, in common sunlight, as can be proved by separating them by a prism, and by bringing all these colored lights together to form white light again. This breaking up of light into different colors is called decomposing it, and it can be decomposed in many other ways than by a prism. Every one of you must have seen the dew-drops on the grass doing it in the early morning sun. You have seen a piece of ice in which was a minute crack, show rainbow colors, and there are other ways in which white light is split up or decomposed into its colored rays. A piece of window glass allows the light to pass through it without change, but if fine lines are ruled upon it with a diamond point, the light will pass through, but it will not be white, but broken up into colors. These lines are ruled very close, over 12,000 having been ruled to an inch. Various surfaces that are not transparent like glass, if they have fine lines ruled upon them will *reflect* rainbow colors.



COLORS IN SOAP-FILM.

Pearl you know shows these colors, and this is because the pearl is built up in minute layers, and its surface has exceedingly fine lines upon it; brass and other metal surfaces ruled with lines will reflect rainbow colors. Very thin films of glass give the same effect, the upper surface and the under surface of the thin bit of glass both reflect light in such a manner as to produce these colors. The learned men say that the colors are produced by "interference," but as that is one of the things that cannot be explained for reasons already mentioned, you will be obliged to take it as a fact, until some time you can learn more about it. Now, when the film of soap and water gets very thin, as you blow the bubble, it acts just like the thin glass; its two surfaces reflect the light in such a way as to split it into the colored rays, and as you make the film thinner and thinner, the colors change. A very pretty way to see the colors is with the glycerine and soap mixture I told you about last month. Pour some of this into a saucer, and then dip into it the edge of a small tumbler, just as you would take up a film of suds with your pipe-bowl when you begin a bubble. The mouth of the tumbler will then have a film of the glycerine and soap stretched across it. Hold the tumbler on its side and watch the film. Such beautiful colors as appear! and in bands as shown in the engraving. The film being held upright, it is growing thinner at its upper part and thicker below, and as its thickness is constantly changing, so the colors change, and the charming bands, with all their glowing tints, chase one another down the film. At last the upper part of the film gets so thin that it is unable to reflect the light in such a manner as to produce the colors; at the top, the thinnest part, grayish patches appear, and soon after that the whole disappears, the film has broken! ...I must tell you one more thing about this curious and difficult subject. By experiments with other films, scientific men have found out how thick a film must be to form the different colors, and how thick the film is when it stops producing them. When the bright colors cease and the film is gray, it is known that the soap film is less than $^1/_{156,000}$ of an inch thick! Perhaps you will think that in such a case we should talk about thinness rather than thickness. So common a thing as a soap-bubble can give rise to questions, which even the most learned men find difficult to answer. THE DOCTOR.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. I haul time.
2. Angel Ziva.
3. Notes ran.
4. Pieced love.
5. Agile rust.
6. I get all: sure.
7. Mind one part.
8. Sort canes.
9. Pain out.
10. No crude gum.

CONCEALED NAMES.

(Find 10 boys' and girls' names in the following sentence.)

We are all going over the bridge to-day, nutting. Lulu, Cyrus, Emma, and I. Emma, you can't tell a chestnut from a birch, can you? Is that a sumac or a walnut tree by the side of that crooked, winding path? Is that book a grammar, you have? No, it is "The Coming Race," a most extraordinary affair, I dare say you have heard of it. PUSSY WILLOW.

DOUBLE ACROSTIC.

1. A great desert. 2. A vehicle. 3. A river in one of the Western States. 4. A European Cape. 5. A country in Europe. 6. A bay of the Gulf of Mexico. 7. A river in the South. 8. A European river.—The initials form a country, and the finals a city in the same. HALSEY M. T.

CITIES.

1. Novel, a piece of furniture, and a crossing.
2. An adverb, to make fast, and to surround.
3. A small lake, a pronoun, and a fruit.
4. A man's name, the residence of many. L. W. SHIPLEY.

NUMERICAL ENIGMAS.

1. I am composed of eight letters:
   My 6, 2, 4, 8, is an article of hardware.
   My 5, 7, 3, is sold by the million.
   My 1, 7, 3, is a man's nickname.

My whole is a favorite title for banks, insurance companies, etc. JIMMY E.

2. I am composed of 14 letters:
   My 1, 3, 2, was a poet.
   My 11, 8, 5, 6, is used in building.
   My 4, 8, 10, 9, is a kind of medicine.
   My 7, 12, 1, 13, is to lament.
   My 14, 8, 1, is a kind of leather.

My whole is a comment on scandal-mongers. JEE.

SQUARE WORDS.

1.—1. A piece of earth. 2. A body of water. 3. A plant. 4. What it sometimes costs. ELLEN M.

2.—1. Something to ride in. 2. An imaginary monster. 3. Science. 4. An examination. CYRUS G.

CROSS WORD.

My first and second are both in starch,
My third and fourth are both in March,
My fifth and sixth are both in regale,
My seventh and eighth are both in assail,
My ninth and tenth are both in lumber,
My eleventh and twelfth are both in number,
My thirteenth you may always find in brown,
And my whole is a statesman of great renown.

ITALIAN BOY.

DECAPITATIONS.

1. Behead a covering and leave a river. 2. Behead "to wear off," and leave value. 3. Behead a collision and leave to whip. 4. Behead to break and leave to be hasty. 5. Behead darkness and leave a machine. 6. Behead a fish and leave an exclamation. NIP.

PI.

Item si het toms lebust tey eth stom beansiltia fo toperdestar, dan yb gapreapin ot kate hotgin si tempertid ot keat lal. GEORGE H. F.

PARAPHRASED PROVERB.

Herb also fastened ton twice two negative superior animal.

ANSWERS TO PUZZLES IN THE JANUARY NUMBER.

CHANGED HEADS.—Bear, fear, dear, gear, Lear, near, rear, sear, tear, year, wear, pear.

DOUBLE ACROSTIC.

W-illiamspor-T
A- llepp -O
R- usse -L
S- yracus -E
A- ra -D
W- icomic -O

NUMERICAL ENIGMA.—Huntsman's Bugle.

SQUARE WORDS.

1. S M A C K	2. Y I E L D
M E L O N	I N D U E
A L O N E	E D I C T
C O N G E	L U C R E
K N E E L	D E T E R

ANAGRAMS.—1. Intertwine. 2. Misogynist. 3. Auditorial. 4. Cruiser. 5. Obituaries. 6. Marshalled. 7. Schismatic. 8. Incongruous. 9. Forbearance. 10. Forebodingly.

QUERY.—Rapidan (rapid Ann).

RIDDLE.—The teeth.

Thanks for letters, puzzles, etc., to Denver C. T., Cllo. Albert and Augusta, Edna M. L., R. W. M., Italian Boy, J. T. D., Addie, J. M. Y., and Capt. John W. W.

MRS. M.—You are too modest.

Send communications for the Puzzle Box to Aunt Sue, Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

What is Service Berry?

Master Josie E., writing from Lewis Co., Mo., says: "There is a tree that grows abundantly here, and is called 'Sarvis,' or 'Sarvice' Berry Tree. What I wish to know is the *proper name* of the tree, and from what did the name 'Sarvis' originate? I hope you will excuse me for troubling you, but I could not find any one else that could tell me" — Probably Master Josie thinks we are a long while in answering his question, but his letter somehow got mixed with some other matters, and it only turned up just now. To begin with the end of your letter, let us say, do not apologize for "troubling" us, because we do not regard it as a trouble at all, and wish every boy and girl to feel that their questions are gladly welcomed. When they ask questions, we know what they are thinking about and what kind of articles will please them. But to come to the tree; the name "Sarvice" is a mispronunciation of Service. The tree that is known as "Service-berry" in the Eastern States, and we suppose the same one that is so called with you, has long clusters of white flowers in early spring, and a sweet eatable fruit, somewhat larger than a huckleberry. It is also called "Shad-flower," and "June-berry"; the berries are very good, but with us the trees are so few and the birds so many, that but little fruit is left for the boys. Perhaps you would like to know the botanical name of the tree, which is *Amelanchier Canadensis*. There is a similar tree in Savoy, in Europe, which the people there call *Amelancier*, and that name has been taken for the botanical one. You will perhaps be surprised to learn that the Service-berry is very closely related to the apple and pear, but such is the case. When our European ancestors settled in this country, they gave to the plants they found here the names by which they knew similar plants at home, and we have many plants in this country bearing the names of those in the old country, though they may be quite different. As in England, there was a pear-like tree called Service-berry, or Service-tree—it was very natural for them to give the name to a tree that, in some respects, resembled the one they knew at home. But this does not tell you how the name Service came to be applied to the European tree, and that is the funniest part of it. The name comes from *cervisia*, which is the Latin word for *beer*, because in ancient times the fruit of the European tree was used to make a kind of fermented drink, or beer. It is going a long way back you will think to find an answer to your question, but you will find that many words in common use have their beginning away back in the past.

Strange Squashes.

At one of the great horticultural shows held in France last season there were some squashes that attracted much attention. Some appeared to be made up of two parts quite unlike one another, and others of three. Besides squashes, there were gourds showing the same odd appearance. A close inspection showed that these squashes and gourds were grafted; for instance, a bright green kind was cut off when young and had a portion of a yellow one of the same size carefully fitted to it; the two united, the wound healed over, and the double squash grew on as if nothing had happened. Several of these squashes were figured in a French journal, and we have copied one of the pictures, which shows a large green variety with a small summer squash apparently growing out of its side. This appearance is produced by uniting the two when young, by taking off the skin of each and binding the two freshly cut surfaces together. If you ask what use this is, we shall have to answer that we know of no immediate good that can come from uniting squashes of different kinds. It is interesting as showing that what happens with stems can also take place in fruit, for strictly speaking, a squash is a fruit as much as an orange. Still, when experiments of this kind are made, we can never tell what they will lead to, and it is possible that some one may find in this a hint that will show the way to something more useful.

ZIP LEARNING HIS FIRST TRICK.—*Drawn and Engraved for the American Agriculturist.*

Zip Learning his First Trick.

Did you ever notice the great difference there is in dogs? Some are so intelligent and cunning, that we hardly care to teach them any tricks, while others are only interesting on account of the accomplishments which have been taught them, but when not showing off, are rather stupid fellows. Now and then we find one in which native intelligence is added to good schooling, and such a dog is a capital companion. The difference of dogs at school, is quite as great as that of children; some will not be taught, no matter how much they are coaxed and tempted, while others evidently try to do what is asked of them, and if they do not understand what you want them to do, will look at you with an expression which says almost as plainly as words, "try me again, please, I think I understand now." In teaching a dog, the very first thing required is patience, and this of course includes control of your own temper. If you have the affections of the animal, he will try to please you, but if you should so far forget yourself as to get into a passion, scold, or even cuff the poor fellow, he will very likely get the sulks, and prove a poor scholar. One of the first things to teach a dog, and one which all dogs should be taught, whether their education goes any further or not, is to lie down when told, and where he is told. This is usually easy to teach. Recollect that dogs go by the tone, and not by words, and the command to do any particular thing, should be given always as nearly as possible in the same tone of voice. We naturally say "lay down," in a different tone from "come here." Another useful thing to teach a dog, is never to eat unless he is told. After he is properly taught to lie down, place his food before him, and do not allow him to touch it until you give the word. Always have the same word for this, such as "Take," "Now, sir," or whatever you choose. After a while let the food be before him a longer and longer time, until he can be safely left with it while you go out of sight. While teaching this lesson, only the teacher should feed the dog, and it should be repeated every time he is fed. These are useful lessons instead of tricks. Master Robert is showing Zip one of the commonest tricks—leaping through a hoop. Begin with a large hoop held low, and gradually increase the hight at which the hoop is held, and make it smaller. We have seen a dog leap through a hoop so small, that you would hardly think it could pass over his body. Master Robert has learned one of the secrets of success in teaching his dog; he has something in his hand with which to reward him when he has done handsomely. Dogs are generally fond of sugar; they should not have too much, as it tends to make them fat, but a lump now and then, as a reward for well doing, may be given, or a small cracker will answer. It is not necessary to state the many things that a bright dog may be taught, if one will persevere, and a well educated animal will repay the trouble his lessons have cost.

WALTHAM WATCHES

TO BUY one try the following plan: **WRITE A SHORT LETTER** (on a postal card will answer) as follows:

Howard & Co., 222 Fifth Avenue, New York:
Send me your new Price List of Waltham Watches as advertised in the American Agriculturist.

(Sign name and address in full.)

By return mail you will receive the Price List free and postpaid. It is a book of 16 pages, and in it are described **ONE HUNDRED AND SIXTY-FOUR VARIETIES** of Waltham Watches, from which you cannot fail to make a selection. Send us the order according to the directions in the Price List, and **WE WILL SEND THE WATCH** by express, with the bill to collect on delivery. On every bill are instructions to the Express Agent to allow the purchaser to **OPEN THE PACKAGE AND EXAMINE** the watch before paying. If it is not in every way satisfactory you need not take it, but let it **COME BACK AT OUR EXPENSE**; even after you have taken and paid for it, if it does not prove satisfactory, you can exchange it, or we will **REFUND THE MONEY** at any time within a year.

Do not let distance from New York deter you from writing, as the farther you are **THE MORE ADVANTAGE IT IS FOR YOU** to buy of us.

We have sold some Sixteen Thousand Waltham Watches on this plan during the last six years, and fully one-half went **WEST OF THE MISSISSIPPI** and to the Pacific States and Territories. At all events, if you feel the least interest in the matter, write for the Price List. **IT WILL ONLY COST YOU ONE CENT** for a postal card.

Be sure and mention that advertisement was seen in the *American Agriculturist.*

Address: **HOWARD & CO.,**
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☞ *Every Watch warranted by special certificate.*

L. Decker & Co's Premium American Billiard Tables have taken the first premium medal at the American Institute, N. Y., for six successive years. Send for catalogue. Warerooms, cor. Canal & Centre Sts., N. Y.

And Not Wear Out.

For sale by Watchmakers. By mail, 50 cents. Circulars free. J. S. BIRCH, 37 Maiden Lane, New York.

(CIRCULAR.)

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No. 8 Church Street,
P. O. Box 5,509. New York City.

This is a combination of capitalists to supply the consumers of Teas throughout the United States on the mutual principle

We have experienced agents in all the best districts of China and Japan to select Teas especially for our trade.

We expect every consumer of Teas to render us all the assistance they can in carrying out our enterprise, as we make a specialty of SUPPLYING CONSUMERS ONLY (and allow no middlemen to make any profit on our importations), which will enable us to supply them with Teas at prices lower than have ever been known, and of those fine qualities that seldom reach the interior, being sold only in the large cities and among the very wealthy.

Hoping the consumer will take an interest in our enterprise, and send at once for a circular with full explanations of how to proceed to obtain our goods, we remain,

Most respectfully yours,

Consumers' Importing Tea Co.,
No. 8 Church Street,
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PLANTS AND SEEDS
FOR EVERYBODY.

Our new handsomely-illustrated **Catalogue for 1875** is now ready. Sent to any address on receipt of a letter stamp. Address the

BELLEVUE NURSERY COMPANY,
Paterson, New Jersey.

STATEMENT OF

The Mutual Life Insurance Company of New-York,

F. S. WINSTON, President.

FOR THE YEAR ENDING DECEMBER 31, 1874.

ANNUITY ACCOUNT.

	No.	Ann. Pay'ts.		No.	Ann. Pay'ts.
In force, Jan. 1st, 1874,	47	$22,000 00	In force, Jan. 1st, 1875,	49	$26,653 00
Issued and Restored,	3	4,701 00	Terminated,	1	48 00
	50	$26,701 00		50	$26,701 00

INSURANCE ACCOUNT.

In force, Jan. 1st, 1874,	86,416	$289,505,836	In force, Jan. 1st, 1875,	90,914	$301,928,726
New Risks,	12,756	38,126,906	Terminated,	8,258	25,704,016
	99,172	$327,632,742		99,172	$327,632,742

REVENUE ACCOUNT.

Dr.		Cr.	
To Balance from last account	$62,363,157 38	By paid Death and Endowment Claims,	$3,468,645 79
" Premiums received	15,651,078 35	" " Annuities	25,250 27
" Interest and Rents	4,406,074 95	" " Dividends	2,991,197 11
		" " Surrendered Policies and Additions	4,984,615 36
		" " Commissions (payment of current and extinguishment of future)	800,499 96
		" " Expenses and Taxes	792,690 88
		Balance to New Account	69,157,411 31
	$82,220,310 68		$82,220,310 68

BALANCE SHEET.

Dr.		Cr.	
To Reserve at four per cent	$67,911,199 47	By Bonds and Mortgages	$56,916,056 39
" Claims by Death, not yet due	442,306 79	" United States and New-York State Stocks	8,023,375 38
" Post-mortem Dividends, due on demand	28,830 47	" Real Estate	2,767,273 99
" Premiums paid in advance	24,191 22	" Cash in Banks and Trust Companies at interest	2,425,882 34
" Undivided Surplus	4,040,442 11	" Interest accrued	1,085,982 15
		" Premiums deferred, quarterly and semi-annual	1,095,672 19
		" Premiums in transit, principally for December	120,225 28
		" Balances due by Agents	12,502 34
	$72,446,970 06		$72,446,970 06

From the Undivided Surplus a Dividend will be apportioned to each Policy which shall be in force at its anniversary in 1875.

I have carefully examined the foregoing Statement, and find the same correct.
January 20th, 1875. ISAAC F. LLOYD, *Auditor.*

NOTE.—By act of the Trustees the membership of this Company is limited to one hundred thousand insured lives.

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Late Rose Potatoes for Seed.
Warranted.—Half Bushel, 75c.; Bushel, $1.50; Barrel $3.
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In need of good seeds and plants should read my advertisements on page 110.
J. B. ROOT, Seed Grower, Rockford, Ill.

CHEESE AND BUTTER-MAKING APPARATUS.

Factory-men or Dairymen in want of any kind of Machinery, Utensils or Furnishing Goods in the above line, should send for our new Illustrated Circular, which gives full information regarding all late improvements.
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PLANTS 8 ACRES PER DAY, with a Team, Man, and Boy.
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H. J. KENT & CO., Rochester, N. Y.

$500 IN PREMIUMS.

IMPORTANT TO POTATO GROWERS.

BLISS'S SELECT GARDEN SEEDS

NEW AND CHOICE VEGETABLES.

THREE NEW POTATOES.

ALPHA—from seven to ten days earlier than any other variety in cultivation. In small quantities only, $3.00 per lb. A first class certificate was awarded to this variety the past summer by the Royal Hort. Soc. of London.

SNOWFLAKE—Beautiful in appearance—superior in quality—early—ripening but a few days later than the Early Rose—very productive. Price:—Per pound, $1; 3 pounds to one address, $2, by mail, prepaid. By express or freight, ½ peck, $3; 1 peck, $5; ½ bush., $8; 1 bush., $15; 1 barrel, $35.

EUREKA—a seedling of the Excelsior—crossed with the White Peachblow, and possesses in a remarkable degree the combined qualities of these favorite varieties.

This is a second early variety, wonderfully productive, an excellent keeper, and will, when better known, become a general favorite. A Silver Medal was awarded to this and other seedlings of Mr. Brownell by the Mass. Hort. Society.

Price:—Per pound, $1; three pounds to one address, $2, by mail, post-paid; by express or freight, ½ peck, $3; 1 peck, $5; ½ bushel, $8; 1 bushel, $15; 1 barrel, $35.

$500 IN PREMIUMS will be divided among the six successful competitors, who shall produce the largest quantity from one pound of either of the above two varieties, **SNOWFLAKE** and **EUREKA. $250 FOR EACH VARIETY** subject to conditions named in our Potato Catalogue.

BROWNELL'S BEAUTY.—Introduced in the spring of 1873. This variety was extensively grown the past season, and gave general satisfaction. Its fine shape, handsome color, extraordinary productiveness, and superior quality, have already established it as one of the best for general culture.

Price:—One pound, 50 cts.; three pounds for $1, by mail to one address; by express or freight, 1 peck, $1.50; ½ bushel, $2.50; 1 bushel, $4; 1 barrel $8.

EXTRA EARLY VERMONT.—Like the Early Rose in appearance and quality, but from seven to ten days earlier and much more productive. A trial of three years fully confirms all of our previous statements, and we unhesitatingly pronounce it as the best early variety for general culture in the market.

Price:—By mail, post-paid, 1 pound, 50 cts.; 3 pounds, $1; by express or freight, 1 peck, $2; ½ bushel, $3; 1 bushel, $4.50; 1 barrel, $9.

The charges on all Potatoes sent by express or freight to be paid by the purchaser.

For a full description of the above, with some other desirable varieties, see our *Illustrated Potato Catalogue*, which will be sent free to all applicants.

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Ten days earlier than any other variety known.

Prof. Thurber, the well known editor of the *Agriculturist*, thus describes it:

"I had over a dozen varieties, including this, among which were several novelties, as well as those accepted as standard varieties. All were treated precisely alike, from the time of sowing to that of fruiting. I think it a moderate statement to say that the Conqueror was ten days earlier than any other in the garden. By earliness I do not refer to the ripening of a single specimen, for the Conqueror ripened one fruit astonishingly early, but I mean that the vines of this would afford a good table supply at least ten days before those of any other variety. I would also add, that in color, shape, and quality, this variety was highly satisfactory."

Price, 25 cts. per packet; 5 packets, $1.00.

THE GOLDEN TROPHY,

a sport of the well known Trophy—and its counterpart in shape, size, and general appearance, of a rich golden yellow color, a valuable acquisition.

25 cts. per packet; 5 packets, $1.00.

NEW SWEET CORN—TRIUMPH.

(A VALUABLE ACQUISITION.)

This new and superior variety is the result of ten years of careful cultivation and the selection of seed stock, with the aim of developing the following points of excellence, which are now combined in this variety, viz.: sweetness, earliness—it being the earliest of all the large varieties, and unsurpassed for its richness, sweetness, and delicacy of flavor, productiveness, size of ear and white appearance when cooked. It has been cultivated as a market variety for several years, (though the seed was not offered for sale until last year,) and it is highly endorsed by reliable and prominent parties who have given it a trial. Nothing can surpass it as a market variety. Price, 25 cts. a packet; 5 packets, $1.00. Select ears, 50 cts. each.

BLISS'S GARDENER'S ALMANAC and **Abridged Catalogue,** illustrated, contains upwards of 100 pages, and embraces a Monthly Calendar of Operations and a price list of all the leading **Garden, Field, and Flower Seeds,** with brief directions for their culture. A copy will be mailed to all applicants inclosing two three-cent stamps.

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DREER'S GARDEN SEEDS

1875. ☞ Always Fresh and Reliable. **1875.**

The **Amateur and Market Gardener** supplied with the best quality of **Vegetable and Flower Seeds,** and every requisite for the **Garden** and **Greenhouse.** Our seeds are fully tested before sending out by an experienced Market Gardener, to insure our customers against loss.

Dreer's Garden Calendar for 1875 is now ready, and will be mailed free, contains 184 pages of select lists of **Seeds** and **Plants,** and several new varieties of valuable vegetables, including Dreer's Improved Lima Bean, (see *Agriculturist*, Nov., 1874,) and Bastian's Perfection Beets; the best and most profitable varieties for the Market Gardener. Hanson Lettuce, New Peas, Potatoes, &c.

HENRY A. DREER, Philadelphia, Pa.

Onions, Cabbage, Squash.

Farmers in the Middle and Southern States think they can not grow onions the first year from the seed; *this is a mistake;* from my strain of seed some have grown them to weigh a pound the first season as far South as Texas! as see letters in my Seed Catalogue, My Treatises on Onion, Cabbage and Squash Raising, abounding in a thousand minute directions from how to select the ground to how to market the crop, by mail 20 cts. each. Seed Catalogue *free* to all.

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☞ **PURITY OF SEEDS.**—We are well aware how important it is for Seeds to be Pure and True to name, and it would be ruinous for us to risk our own established reputation and the interests of our customers who rely upon us, by sending out any but the best of Seeds and Plants. Our Annual Catalogue of SEEDS, VEGETABLE PLANTS, FLOWERS, TREES, etc., for 1875, mailed free to all on application. Prices as low as any responsible house, and stock of the best quality. Market Gardeners should have our Catalogue.

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SUGAR BEET.

I have continued to improve this Beet since it was introduced to the public, four years ago. This season I am able to furnish seed from Beets superior to any heretofore sent out. This Beet will yield more than most varieties of Mangold-Wurzel, and contains three per cent more of sugar. The best Beet ever raised for feeding cows or young stock—From thirty to forty tons raised to the acre, at a cost of five cents per bushel. The cheapness with which they can be raised, the amount of healthy, nutritious food raised to the acre, and its great value as food for cattle, sheep and swine, makes this the most profitable root to raise.

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Address **PLANT SEED COMPANY,**
Established 1845. *ST. LOUIS, MO.*

Best and Cheapest **SEEDS** In America Or Money Refunded.

Buy direct from the GROWER cheaper than dirt. Can beat the world on prices, quality, reliable, fresh genuine seeds, true to name. A nice Illustrated Floral and Garden Guide free. Wholesale list for Seedsmen free.

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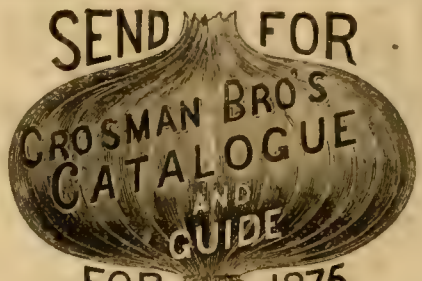

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Seed Potatoes a Specialty.

VERMONT EARLY ROSE,

PEERLESS, WHITE PEACH-BLOWS,

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Fresh and Genuine Wethersfield Onion Seed

of all the different varieties. Also

EARLY AND LATE CABBAGE SEED,

carefully grown from improved selected stock.

Catalogues, containing a complete List of Choice Vegetable Seeds, also Garden and Farm Implements, sent free to all applicants.

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Will mail to applicants, free of charge, their **New Catalogues** of

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33 KINDS FOR $1.00.
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Descriptive Priced Catalogue, with over 150 illustrations, mailed free to applicant.

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Cuphea hyssopifolia.

The habit is very dwarf and compact; color of the small leaves, dark glossy green; flowers bright-lilac and produced in great profusion all the year round, beginning even with the cutting in the sand-bed. Sent by mail post-paid, on receipt of the price—75 cts. each; $6.00 per doz. (See *American Agriculturist*, Jan., 1875, for full description of the above.)

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BEAUTIFUL EVERBLOOMING
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STRONG POT PLANTS
Suitable for immediate Flowering. Sent Safely by mail, post-paid.

Five Splendid Varieties, purchaser's choice, $1; 12 do., $2.

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Send for our **Illustrated Catalogue of Plants and Seeds**, free by mail.

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AND
BEDDING PLANTS BY MAIL.

A list of our popular $1 Collections of Flowering Plants for 1875 is now ready for free distribution. Also our Descriptive Catalogue of Plants, Seeds and Fruits. We mail plants at any time, cold or hot, with uniform success.

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Chestertown, Kent Co., Md.

"LARCHES, EVERGREENS,"
Largest Stock in America.

Both seedling and transplanted trees. All grown from seeds on our own grounds, and better and cheaper than imported stock.

European Larch and **Evergreen Tree Seeds,** by the ounce, pound or 100 pounds.

Send for Catalogues.

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We offer for **SPRING, '75,** an unusually large stock of well-grown, thrifty

Standard and Dwarf Fruit Trees.
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Monarch of the West	$ 50	$1.50	$10.00	
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Small Fruits—Grapes, Currants, Raspberries, Blackberries, Strawberries, Gooseberries.

Ornamental.—Weeping and Standard Trees.

Evergreens, very fine.

Shrubs—Flowering and Variegated leaved.

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Clematis Jackmanni, *is perpetual and hardy*—"lives easy"—grows fast, and flowers the first year.

12 Sorts Perpetual White Clematis, and 50 new varieties of many shades of color.

Strong plants by mail safely.

Roses and Shrubs by mail, post-paid, as follows:

6 Choice Roses for.....$1.00 | 13 Choice Roses for.....$2.00
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STANDARD PEAR TREES A SPECIALTY.
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Will be mailed **Free** to all applicants. This is one of the largest and most complete Catalogues published. It is printed on beautifully tinted paper, contains **216** pages, **two elegant colored plates,** over **300 fine engravings,** and gives full descriptions, prices, and directions for planting about **1200 varieties** of **Vegetable** and **Flower Seeds, Bedding Plants, Roses,** &c., and is invaluable to Farmer, Gardener and Florist.

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HENDERSON'S
Early Summer Cabbage.

We send out this new variety of Early Cabbage, feeling satisfied that it will rival, if not to some extent supersede, the Wakefield. The merit of this variety consists in its being the earliest of all large cabbages, coming in but a few days after the Wakefield. It has also another valuable peculiarity, of rarely or never bursting open when ripe, so that if a crop can not be used at once, it will not spoil, as is the case with most of the other early sorts. There is no doubt of it becoming a standard variety, either for market or private uses. Per Packet, 50 cents.

VEGETABLE PLANTS AND ROOTS for Farmers and Market Gardeners.

Early Jersey Wakefield Cabbage Plants (cold-frame), $10 per 1,000.
Early York, E. Winningstadt, and E. Ox-Heart at same rates.
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Horse-radish sets, $6 per 1,000.
Asparagus, Colossal, Van Sielen's 2 year old, $8 per 1,000.
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Celery plants, of all varieties, contracted for in quantities at special rates, delivered in July.

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EVERYTHING
FOR THE
GARDEN!
FOR

Florists and **Market Gardeners** at lowest rates—monthly wholesale Lists of which mailed free on application.

Peter Henderson & Co.
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Choice New Vegetables.

Butman Squash.—Dry, fine grained, first-rate. This is the only squash known to have originated in the United States. (25 cts. per package.) **Talby's New Cucumber.** This combines in itself the best qualities of the White Spine and English Frame, being extra large, very handsome and remarkably prolific. (25 cts. per package.) **Russian Netted Cucumber.** Very early, skin of a bronze color, and thickly netted. As excellent as it is singular. **Pratt's Early Sweet Corn.**—The earliest of all varieties of market size. **New German Watermelon.**—Earlier than any other variety by a fortnight. **Carter's Premium Gem Pea.** Very early, very dwarf, very prolific, decidedly superior to "Little Gem." **New Queen Onion.** A white variety. The earliest onion grown. **Mammoth Yellow Chili Squash.**—Has been grown to weigh 200 pounds. **Bean Pea.** is superior to common pea bean, being as hard as a shot and very prolific. **Hanson Lettuce.**—This is the largest of all lettuce, making leaves the size of early cabbage. **Marblehead Pole Bean.**—The earliest pole bean yet known, pods very long and tender. ☞ *Packages of each of the above sent at Fifteen Cents each.* ☜ **Bonnet Gourd.** (20 cts. per package.) **Bastian's Early Blood Turnip Beet.**—For market gardeners and all others this is *the* early beet. (Package 10 cts.) My Illustrated Catalogue of Vegetable and Flower Seed, containing almost an endless variety, sent free to any address. JAMES J. H. GREGORY,
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Seeds for Market Gardeners a Specialty.

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Improved Agricultural Implements, Fertilizers, etc., etc.

SEEDS
UPON WHICH YOU CAN DEPEND.

YOUNG & ELLIOTT
HAVE REMOVED FROM
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Send for their ILLUSTRATED CATALOGUE, free, of VEGETABLE AND FLOWER SEEDS, that never fail.

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Prepared Fish Guano.
ESPECIALLY ADAPTED TO THE GROWING OF
Cabbages, Beets, Carrots, & Early Vegetables.
THE MOST SOLUBLE AND QUICKLY ACTING FERTILIZER YET PREPARED.

Analysis made by Dr. I. Walz, N. Y., Nov. 17, 1874, of Sample from cargo sch. Albert Mason:

Ammonia	6.11
Decomposed Phosphate	13.
Insoluble Phosphate	3.87

SOLUBILITY OF THIS SAMPLE:

Soluble in cold water	43.57
" " Citrate of Ammonia, sp. gr. 1.09	17.95
Organic Animal Matter, insoluble in cold water or Citrate of Ammonia	29.71
Inorganic Matter, insoluble in cold water or Citrate of Ammonia	8.77
Inorganic Matter, insoluble in Hydrochloric Acid (sand, etc.) 2.20	100.00

Estimated CASH COMMERCIAL VALUE per ton of Mapes' Prepared Fish Guano (potash not included) as per above analysis **$52.10**

The universal success that has attended the use of fish guano, ("scrap,") especially among the TRUCK GROWERS and FARMERS located in the vicinity of its production has led to a demand for a PREPARED *Fish Guano, of suitable condition for transportation and general use*, and free from the *bulkiness, dampness*, (frequently nearly forty per cent water,) *offensive and objectionable* features of crude fish scrap.

Price per ton, in bags (180 lbs.,) delivered at New York, $45.00.

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CROTON GRAPE.
Two fine 2-year old vines for one dollar, sent post-paid on receipt of price. S. W. UNDERHILL, Croton Landing, N. Y.

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30 Varieties of choice Annuals, $1.00; 13 Varieties, 50 cts. This collection contains the choicest English Pansies, German Asters, Stocks, Pinks, Double Hollyhocks, Verbenas, Double Portulaca, and is every way worthy of confidence. Each packet contains a mixture of its kind, and a great display can be made at a small cost. Sent post-paid.
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KNOX FRUIT FARM AND NURSERIES.
GREAT OFFERS!

MORE LIBERAL OFFERS WERE NEVER MADE than the following: ☞ We will send by mail, post-paid, safe carriage guaranteed,

18 Flowering Plants FOR $1.10.
2 Verbenas, 2 Chrysanthemums,
2 Coleus, 1 Ageratum,
1 Fuchsia, 1 Canna,
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1 Geranium, 1 Monthly Rose,
1 Gladiolus, 1 Petunia,
1 Salvia, 2 Basket Plants,
With directions for growing.

8 Grape-Vines FOR $1.10.
2 Concord,
1 Martha,
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All one year old extra vines.

5 Varieties Strawberries FOR $1.10.
25 Jucunda, "Our No. 700,"
12 Burr's New Pine, 12 Wilson,
12 Chas. Downing, 12 Lennings White.

4 Varieties Raspberries FOR $1.10.
6 Naomi, 3 Clarke,
6 Philadelphia, 3 Hornet.

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☞ Our handsome Catalogue of Fruits and Flowers, containing full directions for cultivation, will be sent to all who send address.

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Send 10 cts. for our **CATALOGUE of FLOWER and VEGETABLE SEEDS** for 1875. Beautifully illustrated. Address
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Springfield, Mass.

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BY
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The Singing Book for all Sabbath Schools.
JUST ISSUED.
$30 per 100 copies. Sample copy, by mail, 35 cts.
Lee & Walker, *922 Chestnut Street, Philadelphia.*

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Thorburn's Early PARAGON.

A seedling of the "Early Rose" fertilized with the pollen of the white "Peach Blow," ripening with the former, and combining more superior qualities in a higher degree than any other Early Potato now in use.

Three pound packages by mail, post-paid, $1.60. Price per bushel or barrel as per catalogue.

J. M. Thorburn & Co.,
15 John Street, New York.

CHEAP **SEEDS are Worthless.**
Buy directly of the Grower, and get good stock.
SEND FOR OUR **NEW CATALOGUE FOR 1875,** FREE to any address. **GEO. S. HASKELL & CO.,** Seed Farmers, Rockford, Illinois.

CHOICE SEEDS carefully grown from selected stock by a cautious grower **always pay. Try mine.** See advertisement "Test is better than Talk," on page 110.
J. B. ROOT, Seed Grower, Rockford, Ill.

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More Agents wanted to canvass for the sale of POST'S PATENT GALVANIZED METALLIC EUREKA SAP SPOUTS and BUCKET HANGERS. Samples, Circulars and Terms sent post-paid on rec't of 20c.
C. C. POST, Man't & Pat'e, Burlington, Vt.
PRICE, $4.50 per hundred.

MAPES' DISSOLVED BONE.

COMPOSED OF ONLY

Pure Bone Black, Dissolved in Sulphuric Acid, forming the highest grade Superphosphate that can be made from Bone.

Analysis made October, 1874, by DR. I. WALZ.

Moisture	14.14
Soluble Phosphoric Acid	14.26
= Decomposed Phosphate	31.13
Insoluble Phosphoric Acid	89
= Undecomposed Phosphate	1.92

Guaranteed Standard, on Dry Basis, Soluble Phosphoric Acid 15 per cent.

This preparation is recommended for use in "COMPOSTS" and for mixing with Peruvian Guano, Stable Manure, Fish Guano, and other ammoniacal material. Price per ton packed in barrels (no charge for packages) delivered at New York, $45 per ton.

PLAIN SUPER PHOSPHATE

(or "Acid Phosphate,")

A Cheap Substitute for Dissolved Bone.

The base of this Super Phosphate being South Carolina Rock, instead of BONE, it can be afforded at a price sufficiently low to successfully compete with the cost of importing a similar article from ENGLAND. (12½c. currency per lb. for Soluble Phosphoric Acid. See Report of the "Bussey Institution," 1871, page 170)

Analysis by DR. I. WALZ, New York, Oct. 1874.

Moisture	4.26
Soluble and Precipitated Phos. Acid	11.38
= Decomposed Phosphate	21.84
Insoluble Phos. Acid	6.69
= Undecomposed Phosphate	14.61

Price on the basis of ten per cent.

SOLUBLE AND PRECIPITATED PHOSPHORIC ACID, per ton in barrels (no charge for packages) delivered at New York, $30. Liberal discount on purchases of ten tons and over. Send for pamphlet to

CHARLES V. MAPES, 160 Front St., N. Y.

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Surgical Instrument Maker to the University of Pennsylvania,

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Has always on hand Dr. McClure's Ecraseur for Castrating Horses without loss of blood.

Directions how to use it will be furnished with each Instrument.

See Dr. McClure's work on Horses and Cattle.

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Chapman's. Best Fork and Conveyor in use. Unloads and carries Hay, Grains, &c., over deep mows, into sheds, barns, &c. Saves labor, time, money. Sent on trial. Circulars sent. Agents wanted.

G. B. Weeks & Co., Syracuse, N. Y.

RUSTIC WORK.

Hanging Baskets—Stands—Brackets—Crosses—Settees—Chairs.

Pot Stands, **our new design,** for ½ gallon and 1, 2, and 4 gallon pots. **Just the thing for Porticos, Lawns, and Cemeteries.**

ILLUSTRATED CATALOGUE FREE.

PECK & SKILTON, Westville, Conn.

N.B. Red Cedar Labels.

See February Agriculturist, page 43.

MAPES'

NITROGENIZED SUPER-PHOSPHATE.

A Complete Fertilizer for all Crops.

MANUFACTURED FROM

ANIMAL MATTER (Bone, Flesh), Sulphuric Acid, and Potash Salts.

Analysis of Samples taken by the State Inspector, from cargoes sch. Albert Mason and sch. S. V. C. Simmons, made at Charleston, S. C., Jan., 1875.

Bone Phosphate, dissolved	16.76 per cent.
" " reduced	3.47 "
" " *available*	20.13 "
Ammonia	3.65 "

Signed, DR. C. U. SHEPARD, JR.

Analysis of Samples taken by the State Inspector (Georgia) from sch. May Morn, (3000 bags), Dec. 22, 1874.

Bone Phosphate, *available*	19.940
Ammonia	3.190

Signed, S. A. GOLDSCHMIDT.

Awarded Silver Medal (only three given in several hundred prizes), by New Jersey State Agricultural Society, October, 1874, Professor Geo. H. Cook (New Jersey State Chemist and Geologist, and State Inspector of Fertilizers) Chairman of Committee on Fertilizers.

Price reduced to $50 per Ton (2000 lbs.) packed (in bags (200 lbs.) (in barrels (250 lbs.)

Send for pamphlet, containing letters from fruit and truck growers, farmers, etc.

CHARLES V. MAPES, 160 Front st., N. Y.

Or, ALFRED BRIDGEMAN, 876 Broadway, B. K. BLISS & SONS, 34 Barclay st., R. C. REEVES, 185 & 187 Water st.

Carr & Hobson

Offer the best and **most comprehensive** line of thoroughly-built **modern** Agricultural Implements in the market. Our **GANG PLOW,** "The Volcano," is a machine for every large farmer, while our combined Level-Land and Side-Hill Swivel Plow, The Turtle Harrow, Subsoil Plow, Horse-Hoes, Seed-Drills, etc., are famous everywhere. Call and examine our goods, befor buying your Spring Supplies, or write us what you need. **56** Beekman-st., New York.

"ESTABLISHED 1821."

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MORRIS, TASKER & CO.

PASCAL IRON WORKS, Philadelphia.

TASKER IRON WORKS, New Castle, Delaware. Offices & Warehouses, Philadelphia, New York, and Boston. Manufacturers of Wrought Iron Tubes, plain, galvanized and *rubber coated.* Boiler Tubes. Oil Well Tubing and Casing. Gas and Steam Fittings, Valves and Cocks. Gas and Steam Fitters' Tools. Cast Iron Pipe. Lamp Posts and Lanterns. Improved Coal Gas Apparatus, Improved Sugar Machinery, &c.

We would call special attention to our Patent Vulcanized Rubber-coated Tube.

Self-Propelling Chairs For Cripples and Invalids

Can be *easily* propelled, either in or out doors, by any one having the use of hands.

State your weight and send stamp for illustrated catalogue of different styles and prices.

Please mention this paper.

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A large supply of Field, Garden and Flower Seeds, WARRANTED FRESH. Send for Price List.

Comstock's Seeder, Hand Cultivator,

Weeder, Strawberry Vine Cutter, Shovel and Mole Plows,

Combined or Separate.

W. H. BANKS & CO., Wholesale and Retail Seedsmen, 34 & 36 S. Canal St., cor. Washington, CHICAGO.

GALE'S HAY, STRAW & STALK CUTTERS,

for hand or horse-power—are much lower in price, cut faster, easier, and are more durable than any other. Also the best and cheapest Turnip and Carrot Cutter. Don't pay till you have tried them on your farm and like them. Circulars free.

WARREN GALE, Chicopee Falls, Mass.

COWS

of the Black and White Spotted Breed of North Holland, celebrated for their abundant milk, and now frequently imported into the U. S., may be ordered by L. W. MORRIS, Morris' European Express, 50 Broadway, N. Y., Estab'd 1858.

AMSDEN JUNE PEACH, "Unequaled for Earliness." $1 each, $50 per 100. Circular **Free.**

L. C. AMSDEN, Carthage, Mo.

BUY J. & P. COATS' BLACK THREAD for your MACHINE.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 87.

"Astonished."—One of our good advertisers wrote February 9, expressing surprise (gratifying of course) at the number of intelligent letters already received at that date, from a brief advertisement in the February *American Agriculturist,* these letters coming from an area with a constant widening diameter, which had up to that date extended away to Kansas. We suspect they are still more surprised by this time, especially if their experience is like that of another of our advertisers who offered a pamphlet to such as desired to send for it. His advertisement was ordered for two months, and an edition of 500 of the pamphlets were printed at a cost including postage of 10 cents each. Before the second insertion, he wrote, post-haste, to "stop that advertisement; it will break me; over **13,000** pamphlets have already been called for, and 'still they come.'" He was "astonished," but we were not. The fact is, this journal reaches the great mass, tens of thousands upon tens of thousands, of the wide-awake intelligent people, farmers, and almost all other classes throughout our own country, and in other lands. And as they learn of our rules shutting out humbugs, medicines, unreliable dealers, etc., they patronize our advertisers freely and with confidence. We know there is no other advertising medium in the world more valuable. Our old and large advertisers who have used this journal for many years all say so, and it stands to reason that it should be so. The select and reliable character of the advertisements, their neat printing on small pages where they are readily seen, and the long time each paper is before the readers for study and reference, are all useful to the advertiser.

Metallic Butter Pail.—"L. W. P.", Marshfield, Vt. Butter for shipment to foreign countries should be packed in tin-pails, with water tight covers. The brine does not corrode the tin, and the experience so far with these packages is favorable. There are many important points in favor of metallic packages, such as cheapness, cleanliness, freedom from loss of weight, and loss of quality in transit and storage. The Metallic Butter Package Co., 150 Chambers St., New York, are now making a tin-pail with close fitting wooden cover, and weighing only 5 lbs., which seems to be what is wanted by dairymen.

Catalogues Received.

The following are the catalogues received up to Feb. 15th. Others will be found noticed in January. The enumeration is in alphabetical order, and it is not intended to give one undue prominence over others:

SEEDSMEN.

Unless specially mentioned, the catalogues offer both vegetable and flower seeds.

R. H. ALLEN & Co., 189 and 191 Water st., N. Y. General stock, with special attention to grass and grain seeds.

B. K. BLISS & SONS, 34 Barclay st., N. Y. An illustrated treatise of nearly 200 pages, rather than a catalogue.

BAGG & BATCHELDER, at Springfield, Mass., offer vegetable and flower seeds.

ALFRED BRIDGEMAN, 876 Broadway, N.Y., has two neat catalogues, giving vegetables and flowers separately.

BRIGGS & BROS., Rochester, N. Y. Whether we consider its size or elaborate character, this is certainly a wonderful catalogue. It offers many novelties.

CHASE BROS. & WOODWARD, Rochester, N. Y., a beautiful and highly illustrated catalogue of seeds, fruits, etc., many of which are of their own raising.

COLE & BROTHER, Pella, Iowa, raise seeds and offer chromos to purchasers.

D. T. CURTIS & Co., Boston, Mass., have three catalogues, vegetables, flowers, and novelties.

HENRY A. DREER's catalogue is in the form of Dreer's Garden Calendar, and very full.

JAMES FLEMING, 67 Nassau st., N. Y., offers, besides seeds, various implements and garden appliances.

J. A. FOOTE, Terre Haute, Ind. A well selected assortment.

JAS. J. H. GREGORY, Marblehead, Mass., is best known for his vegetables, but he has flowers also—and squashes.

JAMES R. V. HAWKINS, Goshen, Orange Co., N. Y., has also several new potatoes not generally known.

R. D. HAWLEY, Hartford, Conn., besides engravings of vegetables and implements, gives one of the new State House.

PETER HENDERSON & Co., 35 Cortlandt st., N. Y., give

fine colored plates of flowers, and one of the new Early Summer Cabbage.

Hovey & Co., Boston, Mass., one of the oldest houses, but keeps pace with the novelties.

A. Howard & Co., Pontoosuc, Ill., has bulbs and plants as well as seeds.

David Landreth & Son, Philadelphia, Pa., add to the catalogue of their well known seeds, a useful Rural Register and Almanac.

G. A. Law, Roslindale, near Boston, Mass. Also bulbs and vegetable plants.

John F. Otwell, St. Mary's, Ont., Canada, is a market gardener, who now puts out his first catalogue of seeds. A very creditable attempt.

Plant Seed Company, St. Louis, Mo., send a large and elegant catalogue, and a smaller one in the form of an Almanac.

Perry & Robinson, Syracuse, N. Y., offer premiums for the best plants raised from their seeds.

John Saul, Washington, D. C., has, as his catalogue shows, a seed store, besides his nursery and florists' establishment.

R. H. Shumway, Rockford, Ill., sends his Annual Illustrated Garden Guide.

Wm H. Spooner, Boston, Mass., sends a Gardening Guide; full, neat, and instructive.

J. M. Thorburn & Co., 15 John St., N. Y. City, send four neat catalogues, vegetable, flower, and tree seeds, a wholesale trade list, and all full of the best.

James Vick, Rochester, N. Y., calls his catalogue a Floral Guide; he says that it is so good that the post-office clerks or some one else steal it, that is why people complain of not getting it—He has a German edition.

Washburn & Co., Boston, Mass., in their Cultivator's Guide offer all the "Boston notions."

H. Young, York, Pa., has flower and vegetable seeds, as well as plants of various kinds.

NURSERYMEN.

Some of these are also largely engaged in flower growing—where this is the case, it is mentioned, as is any specialty.

S. W. Adams, Springfield, Mass., also young evergreens.

P. J. Berckmans, Augusta, Ga. Peaches a specialty. Also flowers.

Chas. Black, Hightstown, N. J. Peaches in large quantities.

Bronson, Hopkins, & Co., Geneva, N. Y., send their wholesale trade list.

A. Bryant, Jr., Princeton, Ill., has a full assortment of fruit and forest trees.

Robt. Douglas & Sons, Waukegan, Ill., evergreen and other forest tree seedlings are offered by the million.

Benj. A. Elliott & Co., Pittsburgh, Pa., offer fruit and ornamental trees.

Ellwanger & Barry, Rochester, N. Y. The extent of this establishment is shown by its catalogues, of which we have four, covering fruit, ornamental, green-house and every other department.

A. Hance & Son, Red Bank, N. J., also green-house plants.

C. L. Hoag, Lockport, N. Y. Grapevines and strawberries.

Hoopes Brother & Thomas, Westchester, Pa., include ornamental plants.

T. S. Hubbard, Fredonia, N. Y., specially grapes.

T. C. Maxwell & Bros., Geneva, N. Y., have a very full catalogue, including many new and rare ornamental trees. They make a specialty of the finer kinds of clematis.

Thomas Meehan, Germantown, Pa., specially hedge and ornamental plants, tree seeds, greenhouse.

Otto & Achelis, Westchester, Pa. Also large quantities of seedling and other small stock.

S. B. Parsons & Sons, Flushing, N. Y., specialties, evergreens, camellias, rhododendrons and azaleas.

Randolph Peters, Wilmington, Del. Peaches a specialty.

Richardson & Vail, Geneva, N. Y. A wholesale list with some very low prices.

John Saul, Washington, D.C. Also greenhouse plants.

J. H. Simpson, Knox Nurseries, Vincennes, Ind. Wholesale list of fruit and ornamental trees.

Storrs, Harrison & Co., Painesville, O. Seedling chestnut trees a specialty also florists' plants.

E. Ware Sylvester, Lyons, N. Y. Peppermint-roots also.

N. M. Thompson, St. Francis, Wis. Evergreen and deciduous tree seedlings.

FLORISTS.

Many of the nurserymen are also florists; see the catalogues enumerated above.

Bellevue Nursery Co., H. E. Chitty, Sup't., Paterson, N. J. Some fine novelties.

D. H. Brown & Sons, New Brunswick, N. J. Also vegetable plants.

Dingee & Conard Co., West Grove, Pa Roses a specialty.

R. G. Hanford, Columbus, O. A very full list.

Peter Henderson, 35 Cortlandt st., N. Y., and Jersey City Hights, N. J. Amply illustrated—unusually fine colored plate of roses.

Long Brothers, Buffalo, N. Y., have a plant catalogue, besides a useful little work, the Home Florist.

W. F. Massey & Co., Chestertown, Md. Their dollar collections afford plants very cheap.

Tyra Montgomery, Mattoon, Ill. A special rose list and very full.

Henry S. Rupp, Shiremanstown, Cumberland Co., Pa. A special catalogue of plants sent by mail.

George Such, South Amboy, N. J. The wonderful rare plant catalogue of Mr. S. was noticed some months ago. This contains mainly bedding plants and gladiolus.

E. Y. Teas & Co., Richmond, Ind. A fine rose-list with many novelties.

IMPLEMENTS AND MISCELLANEOUS.

The seed dealers generally keep garden implements of all kinds, and some have those for farm work.

Bramhall & Co., 128 Chambers st., N. Y., manufacture children's carriages, wagons, and sleds, of all kinds in great variety.

A. E. Cooper, Cooper's Plains, N. Y. Balcony and other strong and elegant chairs.

Wm. Clift, Mystic Bridge, Conn. Stock of various kinds. Pekin Ducks and Bronze Turkeys a specialty.

Joseph Harris, Moreton Farm, Rochester, N. Y., offers, among other things, the much talked of Essex pigs, and the productive and popular Late Rose potatoes.

Higganum Manufacturing Co., at Higganum, Conn., publish a New England Almanac, from which their own manufactures are not omitted.

N. Y. Knitting Machine Co., 689 Broadway. Various styles of Bickford knitting machines.

Schenectady Agricultural Works, at Schenectady, N. Y., are carried on by G. Westinghouse & Co., for the manufacture of various farm machines and implements.

EUROPEAN CATALOGUES.

William Bull, London, S. W., (Eng.). Bulbs and tuberous-rooted plants—an immense list.

Waite, Burnell, Huggins & Co., London, Eng., have also a house in Havre, France. They are among the heaviest wholesale seed dealers abroad.

J. B. Guillot, Fils, Lyons, France. This is one of the great rose houses of the world, and their stock immense.

Louis Leroy, Angers, France. Pabst & Esch, N. Y., agents. Wholesale catalogue.

Joseph Schwartz, Lyons, France. New roses.

Vilmorin, Andrieux & Co., Paris, France, Pabst & Esch, No. 11 Murray St., N. Y., agents, send their wholesale list of seeds of all kinds, and a wonderfully comprehensive document it is.

J. C. Schmidt, Erfurt, Germany. Dried and preserved, as well as living greenhouse plants.

American Dairymen's Convention.—The tenth annual meeting of this Association began at Utica on January 12th. Delegates from New England, Ohio, Pennsylvania, several of the Western States, and Canada, were present. Several papers were read, and discussions held upon the subjects treated in them. The most noticable points brought out were that poor milk is caused by poor feed; corn-meal is not, on the whole, a satisfactory feed for milch cows, and must be fed with great caution; bad milk makes bad butter and cheese; too much acid in the curd makes poor and crumbly cheese; it is not the most cream that makes the most butter, some creams yield three times as much butter as others; dairy practice can not be regulated by guess-work; the coming butter-package is a tin one that shall cost very little, and will not be returned; the lower qualities of butter are the most difficult of sale, and drag down the whole market with them; the best qualities of butter never stay in the market unsold; the steadily improving quality of American cheese is extending the demand for it in European markets, no poor dairy products are wanted anywhere. Generally the proceedings were interesting and instructive. That portion relating to the manufacture of cheese out of skim-milk, and a preparation of tallow known as oleo-margarine, can hardly be called instructive, unless it be to the unhappy consumers of the cheese and so-called butter, who may thereby be warned against using any abominable adulteration of this kind. It is very strange that a dairymen's association should quietly listen to an endorsement by any of its officers and leaders of a method of adulteration, which can only have the effect of casting doubt upon the character of their products, and of tending to diminish the popular demand for one of the most valuable articles of food. Tallow, by whatever name it be called, can never become a dairy product.

A Flower Garden, and no Manure.—"M. N. R.," writes from Vermont: "I want a flower garden. No manure of any kind to be had. Can I use the commercial fertilizers? If so, what kind is the best?"—In such a case we should use fine bone, or some of the manures made with dried blood, several of which are advertised. If the garden is not a large one, there should be no difficulty in making during the coming season, all the manure that will be needed for another year. In some place out of sight, make a pit 2 or 3 feet deep, and of convenient size. Begin in spring, and gather all the leaves you can find after the snow is off; put these into the pit, add every bit of sod from trimmings of paths, or what can be had from the road-side; throw in all weeds that have not gone to seed, and all the refuse vegetable matter of the place, and if you have a vegetable garden too, there will be a plenty. Keep all this moist with chamber-slops; if it gives off a bad smell, throw on a coating of dry earth. Put here all waste vegetable and animal stuff that will decay; let some one look out for the manure dropped in the road by passing animals, or, if you live on a paved street, sweep the portion in front of your place once a week, and take the sweepings as pay. If there are woods near by, hire some one to bring a load or two of the earth, provided it looks rich. Save all twigs, brush, and whatever will not readily decay, burn, and preserve the ashes. See if any neighbor throws away the sweepings of his hen-house or pigeon loft, and get that or buy it if for sale. It must be a strange place, if, with a little attention to the matter, you can not get together all the manure you will need.

Mandarin Ducks.—Upon the Annual "Show Bill," which is sent to canvassers for the *Agriculturist*, there is among the engravings a pair of Mandarin Ducks, which have attracted much attention, and we are daily in receipt of letters asking where the birds or their eggs may be had. The engraving was made two or three years ago, of a pair of ducks in the possession of a private gentleman, who kept them for the great beauty of their plumage. The birds are very small, and they can only be regarded as ornamental water fowls. If any have eggs for sale, they will do well to advertise, as the enquiries are very numerous.

Rubber Shoes for Horses.—"J. J. A.," Cumberland Co., N. J. The rubber shoes for horses you wish for working upon salt meadows, may be procured of C. M. Moseman & Bro., 114 Chambers St., New York. These shoes are valuable for many purposes; for tender feet; for corns; in mowing lawns, the surfaces of which should not be marked by the horse shoes; for quarter crack; contracted hoofs; interfering; and in breaking colts.

"Walks and Talks" Correspondence.

Feeding Wheat to Stock.—"G. B.," Nebraska, writes that in his section "all the farmers are feeding wheat, and generally with very indifferent results. I have done better than some others, as I made a cutting-box, and feed chopped food entirely."

Wheat *vs.* Bran.—The same correspondent asks, "which would be the better economy, to exchange a bushel of wheat for 20 lbs. of bran and 40 lbs. of shorts, or to have it chopped, and give one-eighth toll. I can do either, but do not know how to decide."—I feel sure that 60 lbs. of wheat are worth more than 60 lbs. of bran and shorts. As to paying one-eight for grinding the wheat, I am not so certain. If I had the wheat in the sheaves, I would neither thrash it or grind it. I would run the sheaves through a feed-cutter, and feed the whole together. We frequently do this with oats. The wheat, straw, and chaff would then be all mixed up together, and the cows, horses, and sheep, if fed judiciously, would digest the wheat.

Feeding Judiciously.—The Deacon, who happened in while I was answering this letter, asked, "what do you mean by feeding judiciously?"—That depends. In this case I meant giving the horses and cows no more at a time than they would eat up clean, without stopping to "mouth it over," and pick out the grain. The point is to make them eat grain and straw together. I would far rather feed horses and cows *whole* grain mixed with straw or hay, than to feed them meal alone. The chief advantage in feeding meal, is that it can be so mixed with cut feed, that the animals can not separate the meal from the straw and hay.

Feeding Pigs.—"Would you," asks a correspondent at Huntington, Ind., "feed spring pigs that are to be slaughtered in November, all the food they will eat all the time, or would you just feed them enough to keep them in good growing order?"—I would give them all they would eat and digest. If they are getting too fat, reduce the quality of their food, but let them have all they want of *something*. In other words, I would let them have the run of a good pasture, and give them corn and slops enough to keep them growing as rapidly as possible. If they seem to be getting too fat, ease up a little on the corn, but let them have all the slops or grass or clover they will eat.

COMPOSITION OF CORN COBS.—An old friend in Canada asks me to inform him "of what elements a corn cob consists?"—Of precisely the same elements as sawdust. In fact, when you come to elements, all plants and animals are pretty much the same thing. In this sense there is no difference between a stick of celery and a burdock, or a Canada thistle. Woody fibre, and starch, and sugar, are composed of the same elements. But we need not say that there is a vast difference in their nutritive value. A green corn cob, when it is full of the juices which are afterwards organized into grain, is a very different thing from the dry corn cob of the ripened ear. When the latter is ground fine, I presume a half starved sheep or cow can digest more or less of its woody fibre. But I doubt very much whether there is nutriment enough in the cob to pay for the grinding.

CORN *vs.* CLOVER FOR PIGS.—"J. C. C.," of Indiana, writes, "You recommended letting pigs run on clover pasture in summer. I have good land to produce corn. It averages one year with another 60 bushels per acre. The same land will bring a very heavy crop of clover. It costs me about 10 cts. a bushel, to raise and put the corn in the crib. Now which is worth the most to the pigs, deducting expenses, the corn or the clover?"—The two together are cheaper than either alone. But *can* you raise corn and put it in the crib for 10 cents a bushel. It costs me more than that to put it in the crib, after it is raised and cut up.

BUCKWHEAT FOR MANURE.—Dr. Harlan, of Wilmington, Delaware, writes me that on the 14th of last July, he had one bushel of buckwheat sowed on one-third of an acre of old potato ground, which had been manured with mineral manure for the potatoes. On the 3rd of September the buckwheat was in full bloom, and stood about four feet high. A square foot of it carefully cut, weighed 1¼ lbs. or 27 tons per acre, produced in 51 days at a cost of about 9 cents per ton. While the crop was growing, half a bushel of winter wheat was sown on the third acre. The crop was then cut with a mowing machine. Why not have plowed the crop under? "Because," says Dr. H., "'one inch of straw,' according to John Johnson, 'put on after sowing the wheat, would save it from the winds and frosts of winter,' and he also says, 'one load of manure on top, is worth two plowed under.' And do not the English farmers tell us that wheat should be sown on solid ground. Hence the reason of their heavy steam presser, used to consolidate the earth before seeding."—All this is very well, and I shall be glad to hear the result. Still I doubt if the plan will usually be a good one. The growth of the buckwheat must extract an immense amount of water from the soil, and leave the land so dry that the wheat would often fail to germinate until late in the fall.

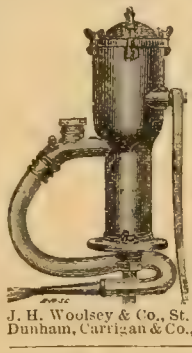
WHEN DO YOU SOW PLASTER?—Usually in the winter, or while the ground is frozen in the spring. I do not suppose that this is the best time, but I like to draw the plaster while the roads are good, and I have no convenient place to stow it away, and so we sow it from the wagon at once. We put a boy to drive, and one man on each side the wagon, and another behind to scatter the plaster as far as they can throw it. We put on two bushels per acre, more or less. We are not particular, as plaster is cheap. This winter we are sowing it on all the clover, and on the fall-plowed fields where barley is to be sown in the spring.

MANGELS AND CARROTS ON SWAMP LAND.—Mr. F. Malcolm, of Ontario, has some swamp land which he sowed last year to mangel wurzel and white Belgian carrots. "The mangels came up badly," he says, "and what did come grew very feebly for a good while. Later in the season the tops grew very fast, but the roots were miserable. The carrots yielded a very good crop."—As a rule, I think the best mangels are grown on rather heavy, well-worked and richly manured upland. The roots are certainly more nutritious on such land than those grown on low, swampy, or alluvial soils.

NORTHERN SPY APPLES.—"S. L. S.," Orwell, Vt., raised 6 Northern Spy apples the past year that weighed 5 lbs. 6 oz. That will do. He wants me to tell him all about my orchard. There is nothing to tell. The only way to raise choice apples, like the Northern Spy, is to plant the trees on thoroughly drained land. Make and keep the soil rich, prune properly, keep the bark clean by washing the trunks and large limbs with lye or carbolic soap suds, and, last but not least, thin out the fruit when the trees are overloaded. My own orchard is in grass, and I keep the land rich by top-dressing with manure, ashes, lime, plaster, or any thing which "comes handy," and eating the grass close all the time with sheep.

Vermont Dairymen's Association.—The sixth winter meeting of this Association began at Montpelier, on the 20th of January. The Hon. E. D. Mason, of Richmond, Vt., delivered the opening address, in which he stated that the improvement in the quality of Vermont dairy products, which had resulted from the association of the dairymen, had benefited the State more than any other one thing. Papers were read upon the value of cheese as food, and upon cooking food for stock, in which no new ideas were developed. Prof. L. B. Arnold, of Rochester, N. Y., in some remarks upon the good fruits of the Association, said that the value of the Vermont butter had doubled since the Association was formed. Twenty live men in a dairy county in New York, had been able to demolish old fogy notions, and to improve the condition of the dairy interests more than all the butter makers of the whole State could have done single handed. An exhibition of butter was held at the close of the meeting; the first premium, a Fairbanks' platform scale, offered by Fairbanks & Co., St. Johnsbury, Vt., was awarded to Judge Alvey Stone, of Chittenden, Vt. Samples of "gilt edged" butter, sold in the Boston market, were exhibited, some of which were very fine, and some were regarded as inferior to common butter. A sample which sold at $1.25 per pound, was adjudged by the members to be the second in quality. The best was made by S. Adams, of Mason Village, N. H., but it was not the highest priced. So much really fine butter is seldom seen on exhibition at one time, and the Boston "gilt edged" furnished the Vermont dairymen with a standard of excellence, at which they may aim in their own dairies.

The People's Force Pumps.
W. S. BLUNT, 77 Beekman St., N. Y.



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The Public are cautioned to look for the name, "People's Pump, Patented Aug. 31, 1869," cast on the lid, to insure obtaining the genuine article, and to avoid litigation.
Send Postal Card for Circulars.
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W. H. Banks & Co., Chicago, Ills.
Magens & Co., Louisville, Ky.
J. G. Murdock & Co., Cincinnati, O.
E. H. Leibey, Cheyenne, Wyoming.
T. J. Riley, Houston, Texas.
Frothingham & Workman, Montreal, C. E.
Benedict & McConihe, Jacksonville, Fla.
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OSAGE ORANGE SEED.

We have a lot as choice as any ever offered for sale. We warrant every grain of it to be of the growth of 1874. We know it to be fresh and good, and will mail samples for testing to any that may desire it.
Our prices for the next 30 days will be as follows:
1 to 10 Bushels.....per bushel ...$6.00
10 to 30 " ..... " " 5.50
30 bushels and over..... " " 5.00
PLANT SEED COMPANY,
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Established 1845.

ROSES Fine everblooming and other roses sent safely by mail post-paid everywhere, and their safe arrival guaranteed.
6 for $1; 14 for $2. A splendid premium rose with each package when **ten cents** is added. A large collection of **bedding plants, shrubbery, &c. CATALOGUE FREE TO ALL.** Address
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SEEDS. THE BEST AND CHEAPEST. Send for Illustrated Catalogue FREE. Address
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POMONA NURSERY.—The largest and best Small Fruits, Trees and Plants of the most desirable kinds. Send for Illustrated Catalogue, 32 pages, telling what and how to plant, with 36 years' experience.
WM. PARRY, Cinnaminson, N. J.

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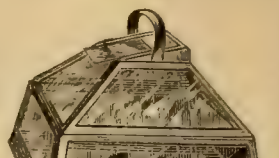

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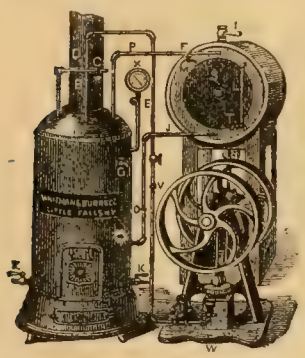

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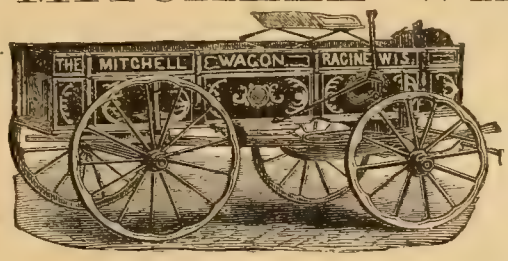

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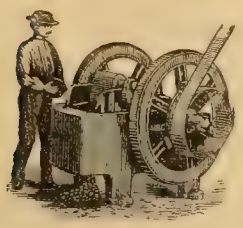

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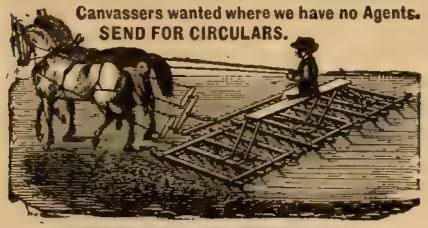

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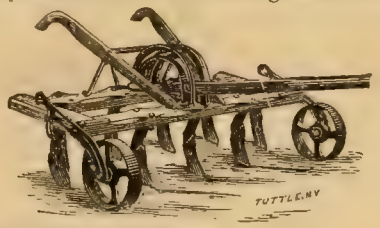

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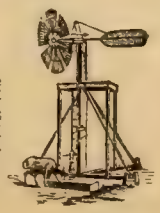

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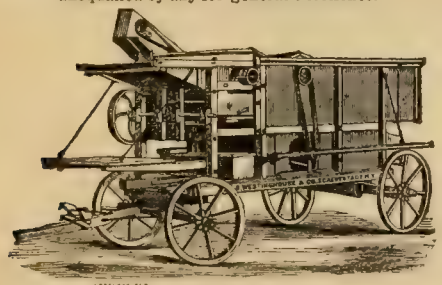

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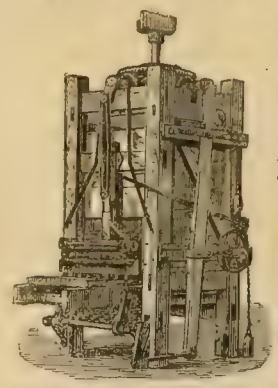

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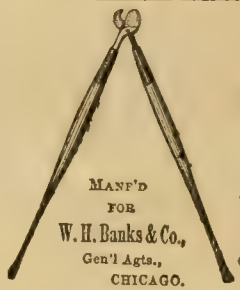

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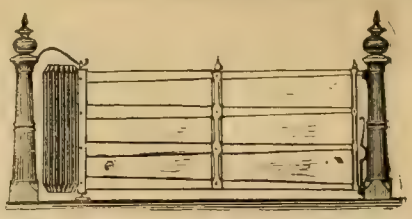

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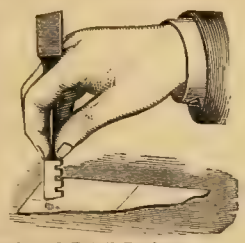

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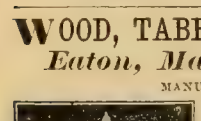

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Still another Use for Old Cans.—Mr. Jonathan Huggins, Sec'y. Bunker Hill, (Ill.) Farmer's Club, and a well known horticulturist and lover of birds, writes that he makes use of discarded fruit and oyster cans for bird houses. We thank him for this hint, and it is not too late for our readers to act upon it.

Calendar for April.

1 Day of Month.	1 Day of Week.	Boston, New England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	5 43	6 26	3 35	5 45	6 24	3 30	5 46	6 23	2 24
2	F	5 42	6 28	4 8	5 44	6 26	4 3	5 45	6 21	3 59
3	S	5 40	6 29	4 34	5 42	6 27	4 31	5 43	6 25	4 28
4	S	5 38	6 30	4 58	5 40	6 28	4 57	5 41	6 26	4 55
5	M	5 36	6 31	5 21	5 38	6 29	5 21	5 40	6 27	5 21
6	T	5 34	6 32	sets	5 36	6 30	sets	5 38	6 28	sets
7	W	5 32	6 33	8 39	5 34	6 31	8 36	5 36	6 29	8 31
8	T	5 31	6 34	10 1	5 33	6 32	9 56	5 35	6 30	9 50
9	F	5 29	6 35	11 22	5 31	6 33	11 16	5 33	6 31	11 09
10	S	5 27	6 36	morn	5 29	6 34	morn	5 31	6 32	morn
11	S	5 26	6 37	0 35	5 28	6 35	0 28	5 30	6 33	0 20
12	M	5 24	6 38	1 34	5 26	6 36	1 27	5 28	6 34	1 20
13	T	5 23	6 40	2 22	5 25	6 37	2 15	5 27	6 35	2 9
14	W	5 21	6 41	2 59	5 24	6 38	2 54	5 26	6 36	2 48
15	T	5 19	6 42	3 29	5 22	6 39	3 25	5 24	6 37	3 21
16	F	5 18	6 43	3 51	5 21	6 40	3 49	5 23	6 38	3 46
17	S	5 16	6 44	4 13	5 19	6 41	4 12	5 22	6 39	4 10
18	S	5 14	6 45	4 32	5 17	6 42	4 32	5 20	6 40	4 32
19	M	5 13	6 47	4 50	5 16	6 44	4 51	5 19	6 41	4 52
20	T	5 11	6 48	rises	5 14	6 45	rises	5 17	6 42	rises
21	W	5 10	6 49	8 2	5 13	6 46	7 58	5 16	6 43	7 53
22	T	5 8	6 50	9 6	5 11	6 47	9 1	5 14	6 44	8 55
23	F	5 6	6 51	10 10	5 10	6 48	10 3	5 13	6 45	9 57
24	S	5 5	6 52	11 13	5 9	6 49	11 6	5 12	6 46	10 59
25	S	5 3	6 53	morn	5 7	6 50	morn	5 10	6 46	11 55
26	M	5 2	6 54	0 9	5 6	6 51	0 2	5 9	6 47	morn
27	T	5 1	6 55	0 57	5 5	6 52	0 50	5 8	6 48	0 43
28	W	4 59	6 56	1 33	5 3	6 53	1 27	5 6	6 49	1 21
29	T	4 58	6 58	2 6	5 2	6 54	2 1	5 5	6 50	2 56
30	F	4 56	6 59	2 33	5 0	6 55	2 30	5 3	6 51	2 26

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
New M'n	6	1 52 mo.	1 40 mo.	1 28 mo	1 16 mo.	0 46 mo.
1st Quart	12	4 59 ev.	4 37 ev.	4 25 ev.	4 13 ev.	3 43 ev.
Full M'n	20	11 46 mo.	11 34 mo.	11 22 mo	11 10 mo.	10 40 mo.
3d Quart.	28	2 33 ev.	2 21 ev.	2 9 ev.,	1 57 ev.	1 27 ev.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1875.

It is now the beginning of a new year to the farmer. How the year will end, depends less upon accident than upon foresight and good management. In all the older states the soil has yielded up its first fruits, and now nothing comes out of it that is not first put into it. True, the soil everywhere is a vast storehouse filled with riches, but it is safely locked, and only those who possess and use the key can touch the wealth secured therein. By no trickery or fraud can one gain admission to it. It is only by honest, skillful labor that it can be reached. Hence it is that the farmer's profession is in its nature an honest and dignified one. He cannot adulterate, he cannot cheat the soil; there are no byways to wealth for him but hard labor and skillful work, and he can live only by what he earns. But blindly directed or unskillful work will bring to the farmer only the poorest return, as in fact it does and must do to every worker in any other of the world's industries. Skill in farming does not wholly consist in raising large crops, but in raising those that produce the most money. Just now it may be noticed that 56 lbs. of the best No. 1 spring wheat sell at the seaboard for $1.10, while 48 lbs. of barley brings $1.40; at the same time the world's markets are crowded with wheat, and granaries are ready to pour out an overflowing stream. Had not corn been a failure in many extensive localities, it would have again been offered for 20 cents a bushel, or burning in thousands of stoves. Also we find that a well fed cow will yield over $50 worth of cheese in a season of six months, while thousands of acres of the best native grass lands in the west are plowed up yearly to make fields for the everlasting corn; $50 worth of cheese can be sent to an eastern market for $2 in freight, but $50 worth of corn or wheat will cost $30 in freight, leaving in one case $48, and in the other, but $20 for the farmer's profit. The cost of producing these articles also differs in about the same ratio. Again the wheat is shipped away to English markets, and wool and woolen goods brought back in exchange, and the western farmer with his narrow profits buys these goods, while his magnificent prairies have not one sheep to crop their most nutritious and healthful grasses, where there might be a thousand. Then the western farmer raises flax and sells the seed to the mills, where it is made into oil and oilcake; but that oilcake goes to England to feed cattle and to enrich those fields which compete with our own, while beef in eastern cities is 25 cents a pound. At the same time the flax fiber is made into manure, and the farmer buys Irish and Scotch linens with the money he gets from these linen weavers for his wheat, which is carried 5,000 miles to feed them. It may be that this cannot be helped, but it looks as though farmers ought to grow less wheat and corn, and more grass, and make more cheese, beef, mutton, and wool. At any rate, there is food for reflection in all these facts.

Hints about Work.

How to Work.—As order is kept by having a place for everything, and keeping everything in its place, so work succeeds best when it is rightly done, and at the right time. There are a best and a worst way of doing everything, and a best and a worst time for doing it. One who has well considered his season's work and has a list of all that has to be done will go right; one labor will succeed another with regularity, and each will be well done. Every job should tell. There should be no making holes and filling them up again on a farm, no hand-work where machines can be used; no small weeds left to grow large; no manure kept wasting by the rain or baked in the sun while crops are starving for it; no work done twice over; no cattle starved or allowed to suffer and fail, to be restored at a greater cost than they are worth; everything should be ahead, and work must be driven and not be allowed to drive. The head must guide the hands always.

Hired men.—Get the best hands, *and keep them.* When a man has become used to his work and his employer, he is worth more than a stranger. There is a way of making men interested in their work, of satisfying their self-respect, treating them courteously and reasonably, giving them credit for success, while holding them strictly responsible for failures, and above all, by paying them promptly and liberally, that will make their work worth double what it would otherwise be. As land advances in price, more labor must be expended on it to make it pay a profit, and by and by we must have a settled laboring class. We are now in process of educating this class of men, and must do it by good management. Give each hired man a copy of the *Agriculturist* to read and study; the money it will cost in a year will be saved every month.

Plowing, Harrowing, and Rolling.—Begin as soon as the ground is dry and mellow, and sow as soon as it is prepared. Where the soil is mellow it is not necessary to harrow before sowing, unless the drill is used. The use of the roller after sowing is invaluable at this season. It compacts the soil about the seed and levels the surface for the harvesters. If you have no roller, give a carpenter a copy of the March *Agriculturist*, and let him make one from the directions and illustrations there given; or, buy an iron one at once from an implement dealer. The roller is an almost indispensable field implement.

Barley.—A warm, dry, rich loam is the best barley soil, but a clay soil if well mellowed and dry, will bring a good crop. Sow two bushels per acre, with the drill, as fast as the land is plowed and harrowed, but if broadcast, use half a bushel more of seed, and harrow. Roll after sowing in either case, or when the barley is two inches high. Either the 2-rowed or 6-rowed may be sown; the first is the heavier, and the latter higher priced in the market.

Clover and Grass-Seed.—There is no better crop to seed with than barley. Six quarts of clover and four of timothy is the quantity per acre. Sow before the land is rolled. We have frequently sown a peck of clover-seed per acre with oats with success in every case, but never used more than 2½ bushels of oats for seed. With this thin seeding the clover is not smothered, and in good ground the oats will be heavy enough. Grass and clover may be sown alone upon fine mellow soil, and if the ground is rich, may yield a cutting of hay in June or July. Orchard grass succeeds well in this way. Cahoon's broadcast sower will sow four acres with grass, clover, etc., in an hour.

Oats.—Soils that are moist, or newly-plowed sod, should be sown to oats in preference to barley. Sow-

2½ bushels of seed as early as possible. No crop needs a more frequent change of seed than oats if heavy grain is desired. New seed should be brought from a cold climate; that from Canada, New Brunswick, or Scotland, is to be preferred.

Fodder Crops.—Barley and vetches, or oats and peas, may be sown in succession every 10 or 14 days up to May, for cutting green. For the dairy there are no more valuable crops; 2½ bushels of barley or oats, and 1½ of vetches or peas, may be sown with the drill or plowed in with a three-inch furrow. It is difficult to cover peas with the harrow. If allowed to ripen, the cured straw and grain makes excellent winter feed, when cut into chaff, for horses, cows, sheep, or hogs.

Harrowing Winter Wheat.—There is no harrow so well adapted to this useful work as the Thomas harrow. The wheat is greatly benefitted, and the grass and clover-seed sown is more likely to catch.

Artificial Fertilizers.—We must use more artificial fertilizers, or farming cannot pay as it ought to do. As farms become worth more, more working capital is required, and the chief need of this is to provide good fertilizers. The value of fertilizers is now well understood. They must be applied early and with the seed. For barley, oats, clover, and grass, apply 150 lbs. of superphosphate of lime, and 100 of nitrate of soda, per acre. Sow them, finely powdered, broadcast—half each way, to get an even spread—as soon as the seed is covered. The first rain will carry them into the soil. Let those who doubt, experiment upon one acre.

Plaster.—Sow one bushel per acre upon young clover or oats, as soon as the growth is started. Seymour's broadcast sower, costing about $70, will sow a bushel or less upon an acre with perfect regularity; it also sows all other fine fertilizers broadcast. It always pays to use plaster at $10 a ton, or 40 cents a bushel.

Pastures.—Harrow old pastures with a sharp-toothed, heavy harrow, scatter some fresh seed and 200 lbs. of fine bone-flour per acre over them, or give them a dressing of fine, well-rotted yard manure. A few bushels of lime and one of salt will be useful.

Potatoes.—Early potatoes should be planted as soon as the oats and barley are in. Cover not less than 4 inches deep, and harrow the ground as soon as the smallest weed appears. Harrow again, if the Thomas harrow is used, after they are up; the plants will not be torn up or injured. Look out for the Colorado potato beetle; hand-pick unless they are in too great force; as a last resort, dust Paris green mixed with 20 parts of flour from a flour dredger upon the vines, keeping the wind always to the back so as to blow the dust from you; or a table-spoonful stirred in a pailful of water, applied with a sprinkler. Take them as soon as the first one is seen, and give them no chance to multiply.

Live Stock.—When hurried with work, don't forget the stock. For lice apply linseed oil and the curry-comb or card. See hints for previous months.

Horses should be worked moderately at first. If the shoulders are inclined to chafe, bathe them with salt and water, wash off the salt, rub dry and apply crude petroleum. This is a healing application for galls or bruises. Wash the feet and legs when muddy, and wipe dry. Give some bran or oat meal in their drink. Give cut feed at noon, and long hay at night. Clean them thoroughly at night. This is important to their proper rest.

Cows and Calves.—The treatment of cows must depend on circumstances. A cow in full flow may profitably get all the food she can turn into milk. When she is turned out to grass the feed of meal should not be cut off. She will take three or four quarts or more of mixed meal and bran in a day without getting fat, if she is the right sort of cow, and pay for it in milk with a good profit. If she is not the right sort, it will be best to get rid of her. Dairying is now the most profitable business of the farm, and where there are cheese factories or creameries, the women of the household are relieved from much severe labor. Calves should be kept growing from the first. When two weeks old they will learn to eat a little cut hay with bran and oatmeal or oilmeal mixed.

Sheep.—Damp yards and moist pastures are fatal to any flock. Dry clean yards and upland pastures are needed. Steaming manure about the yards is injurious. Ewes that are suckling lambs should be fed a pint of meal, grain, or bran daily. The lambs will be the gainers. Fresh water and salt should be provided daily.

Swine.—Nothing comes amiss to pigs at this season. Fine-cut clover hay or well cured corn-stalks wetted and sprinkled with meal, will be eaten readily. Roots of all kinds, brewer's grains, and bran with milk will make pork. But there is much in the breed. Choose a pure breed, whether it be Berkshire, Essex, Suffolk, or the Poland-China, and now is a good time to procure a pair to commence with. But purity of breed will not serve as a substitute for food and care. Pure bred swine will make more pork from the same food than any other, and all their progeny will be of the same character; that is, all there is in "pure blood."

Sundry Matters.—Do not forget the garden, let it be plowed or dug and plenty of manure be hauled for it the first thing. No part of the farm brings in so much money as the garden....Provide clean nests for the hens, and remove all rubbish where they may hide their nests. Keep glass or other nest-eggs to circumvent rats, skunks, and dogs.... Repair water spouts and eave troughs, and clean out cisterns and cesspools. Provide a heap of absorbents for the kitchen slops, and make in-doors and out clean and sweet with lime and whitewash.

Work in the Horticultural Departments.

The prospects are that there will be but a slight interval between winter and summer, and that our work will come all in a heap. He is wise who, instead of running around to consult the oldest inhabitant as to whether such a spring was ever known before, uses the time in making every possible preparation to facilitate spring work. It is fortunate that we do not endeavor to fit our notes to any particular locality, for though April is only two weeks ahead, we should be at a loss to know what to advise for that month. The notes for March were made very full in the departments of Orchard, Fruit-Garden, and Kitchen-Garden, and names of the leading varieties of trees, plants, and seeds given as a help to the inexperienced. Those departments are allowed less space now in order that we may do the same thing for the Flower-Garden and other ornamental departments. Our notes for March will in most places be found more useful in April than in the month for which they were written.

Orchard and Nursery.

Planting will occupy the attention of the majority of fruit-growers. If trees are set early while the buds are still dormant, the roots will suffer less from drying than if planted later, besides the earth has a chance to settle well around them. Every farmer or land owner or occupier should provide an abundance of fruit for his family, and if he has the time or inclination, it will be profitable as a market crop. If there is a nursery in the vicinity it will pay to give an extra price for the privilege of selecting the trees as they stand. Farmers may, with advantage to themselves, sow and raise their own stocks from seed, and give the boys instructions how to graft and bud each in their season.

Orchards.—Established orchards need to have the fertility of the soil kept up; give them well rotted manure. Wood ashes may almost always be applied with advantage; old, neglected orchards may be made productive if the soil is properly worked around the trees, dead and clinging limbs removed; a dressing of lime will often work wonders.

Grafting.—On most places are to be found trees bearing natural fruit, which is only suitable for cider; if these are sound and healthy they may be readily made to produce good marketable fruit by grafting with established varieties; in from three to six years the grafts will commence to bear, which will be sooner than if young trees were planted.

Drains should be provided in every orchard where there is not a natural drainage. See that there are no hollows in which water will settle after rains and during the winter. Underdrains should be at least three feet below the surface of the ground, and their distance apart will depend upon the character of the ground.

Cions.—Cut early this month, before buds have started, and store in sand or earth in the cellar until needed for use. Many nurserymen offer cions for sale at reasonable rates, and this puts choice varieties of fruit within the reach of all, as they are sent by mail very cheaply and with safety, and if packed in damp moss they will not suffer if three weeks or more in transit.

Cherry and Peach-Stones which were buried in boxes last fall, should be sowed in nursery rows.

Seeds of fruit and ornamental trees may now be planted when the frost is out of the ground.

Insects.—Look after tent caterpillars and other injurious insects early; the eggs of the caterpillar may be readily seen on the ends of the small twigs before the leaves appear; if not taken off now they will cause much trouble later in the season. Bark scale is another very destructive insect which is common in some sections of the country, and can only be destroyed by very vigorous applications of whale-oil soap and other washes.

Labels are absolutely necessary in the nursery, or where there is a collection of fruit. Have a supply always at hand.

Fences.—In most parts of this country it is necessary to fence out stray cattle which will often do great damage to young trees. An orchard must have a strong fence and a good gate that cannot be opened by cattle. Allow no broken fence panel to exist even for a single night.

Fruit Garden.

The fruit-garden is in reality only a miniature orchard, though the name is frequently applied to a garden where only small fruits are grown. The family fruit-garden usually contains apple and pear trees as standards, or they may be dwarfs, which can be trained in various ways, according to the taste of the amateur. With skill in pruning, a tree may readily be brought into a shape pleasing to the eye, and at the same time productive. Any fruit-grower, even with scanty means, can easily produce trees with well-shaped heads. Among the numerous styles in which dwarf trees are trained, the most common are the pyramidal and bush, and we sometimes see the oblique cordon and horizontal cordon. These are fully described in the standard works on fruit-culture. Often the kitchen garden is made to serve as a fruit and kitchen garden combined, this is a necessity in small places, where land is scarce, but it is always best to have the two separate if possible.

Grapes are so easily raised that no one need be without them. Plants may be grown readily from either cuttings or layers, or purchased very low. They need but little room if properly trained; the yard must be very small that will not allow of several vines. If they are neglected and allowed to grow year after year without pruning, the result will prove very unsatisfactory. Only a single shoot should be allowed to grow from a vine planted this year. Fresh manure must not be used on vines, as it produces a too vigorous growth, and the wood will not ripen properly in the fall. Ground bones or wood ashes make the best fertilizer. Put cuttings in the open ground six inches apart in a trench, leaving one bud above the surface, taking care to pack the earth firmly around them.

Strawberries.—Set out plants as soon as the ground is in working condition. Plenty of straw or leaves should be at hand to mulch before dry weather comes. The easiest way to manage a bed is to set out a new one every season, and allow the runners to grow together, but where land is scarce it is better to plant in 3 or more rows 2 feet apart, with the plants one foot distant in the rows.

Blackberries and Raspberries must be set at once. Blackberries should be set from 6 to 8 feet apart each way, according to variety, and supported by

stakes. Raspberries require to be planted from 4 to 6 feet, and may be tied to stakes or trellises.

Kitchen Garden.

These notes are made up March 15th, and as we look from our window the prospect is not very inspiring, still we know that the land under that expanse of snow bore bountiful crops last year, and we trust it will this, but all ordinary calculations as to the time of "making garden" must be set aside, and our few notes will have more reference to what to do, when it can be done, than to direct when to do it. The notes for the kitchen garden are unusually brief for this month, but this is more than made up by those given last month. In March will not only be found a list of the most desirable kinds of vegetables, but directions for sowing, and this month's notes are intended only to supply deficiencies in those. The needed directions for hot-beds and cold-frames were given last month, and in many places early in April will be found quite soon enough for the hot-bed in the family garden.

Cold-Frames must be opened every day, except when cold storms occur, when the sash may be raised a few inches at the back.

Carrots.—Sow when the ground is warm and dry; use plenty of seed, that they may break the ground well; keep clear of weeds.

Cauliflowers.—The richer the ground in which these are planted, the better will be the prospect of a good crop. They may be treated like cabbages.

Cucumbers and Squashes in the northern states cannot safely be sown until next month, unless one has the means of protecting them with a hand-glass.

Egg Plant.—Give the seeds sown in hot-bed all the heat possible, otherwise they are a long time in starting. Do not set out plants until May at least.

Sweet Herbs.—Sow seeds of Sage, Thyme, and Sweet Marjorum in hot-bed, or later in the open ground, to be transplanted. Summer Savory must be sown where it is to grow.

Lettuce.—Sow seeds in hot-bed, and later in open ground, and transplant from cold-frame.

Onions need to be sown as soon as the ground can be worked. Unless a liberal allowance of manure is given, it is useless to expect a good crop. Wood ashes makes a good top-dressing when the plants are large enough to weed.

Radishes.—Sow in drills, a few each week. Market-gardeners sow between rows of beets, as they will be used before they are in the way of the beets.

Rhubarb.—Fork in manure around the plants to encourage a quick growth. New beds are made by dividing the old roots so as to have a bud to each piece. Set four feet apart each way.

Tools.—Put in working order. Provide all the new ones necessary for the season's work, and remember that cheap tools are often the dearest. Have duplicate parts on hand of such as are easily broken, so that a break does not always delay the work of a day or perhaps more.

Drains.—Good crops cannot be raised unless the ground is properly drained, and besides wet land is never ready to work until late in the spring. If necessary, open surface drains at such distances as will allow the water to run off immediately.

Manure, and plenty of it, is essential in gardening. Those who can command a good supply of well decomposed barnyard manure, need look no further; those who have not this must make composts and buy fertilizers. The note on page 114, last month, "A Flower-garden and no Manure," contains a hint for the kitchen garden. Guano and fine bone are among the most certain fertilizers; these should be used at the rate of 300 lbs. to the acre. Good fertilizers are made from dried blood, and there are reliable phosphates which may be used to advantage. Much can be done in the way of liquid manure by saving house-slops; this must be used weak; on growing plants it will often work wonders, especially on tomatoes, egg plants, etc.

The Lawn and Grounds.

Our notes have usually been headed Flower-Garden and Lawn, but for this time we put the Lawn first. By Lawn we do not mean merely the grassed surface, but all that portion of the grounds reserved for ornamental purposes, not included in the flower-beds or borders. In the surroundings of a house, the one important thing to consider is the

Lawn, whether it is a small village front yard or an extensive park the foundation, the setting of all other ornamentation is the grass. Let this be good, it is of itself an object of beauty—but let it be poor, brown, and patchy, no expense in trees, plants, and vases, will compensate for the lack of it. In small places, such as yards, it is often more satisfactory to lay turf. If this is done, or seed is sown, complete success requires the soil to be thoroughly prepared. Here is were most fail. It seems like a waste of manure to use it for grass. The work is done for years, and must be well done. No crop more requires drainage, abundant manuring, thorough working of the soil, and careful sowing, than the lawn. After the surface is properly graded, the soil should be as thoroughly prepared as for a garden, and then sown. We have never had much success with "lawn grass" mixtures, and prefer one kind of grass, with a little white clover. Red-top, especially the kind called Rhode Island Bent, or June Grass, also called Kentucky Blue-grass, with a quart of white clover-seed to the bushel, will either make a good lawn. Three bushels—at least—of seed to the acre are needed, and five will be better. Divide in three lots, and sow first say from east to west, then from north to south, then as at first, to get an even distribution of seed, then roll.

Ornamental Trees.—No directions can be given as to where to plant these; each place must be treated according to its own requirements; have a fair proportion of evergreen and deciduous trees. Recollect that small trees will soon become large. Do not plant just the same kinds and in the same manner as your neighbor. Nothing is more distressing than to see one place a counterpart of that on each side. For six excellent trees, not found on every place, yet to be obtained at moderate prices at all good nurseries — Red-flowering Horse-Chestnut, Kœlreuteria paniculata, Oak-leaved Mountain Ash, Gingko or Salisburia, Yellow-wood, also called Virgilia (*Gymnocladus*), and the Purple Sycamore Maple. Weeping trees may be used with fine effect: they are more expensive as a general thing; among the best are Cut-leaved Weeping Birch, Weeping Poplar, Camperdown Elm, and Weeping Larch.

Evergreens may be made useful as well as ornamental, by planting where they will break the cold winds. Our native Hemlock is abundant, but can never be "common." Search all the choice collections, and nothing finer will be found than a well-grown Hemlock. If a screen is the main object, Norway Spruce and Arbor-Vitæ will be selected with Hemlock, on account of rapid growth and cheapness. For ornament merely, among the less common kinds, are the Austrian Pine, Lawson's Cypress, Nordmann's Fir, Bhotan Pine, and many others, while the Dwarf Arbor-Vitæs, Retinisporas and Dwarf Pines make charming lawn plants.

Deciduous Shrubs are indispensable, and there are so many good ones that it is difficult to make a selection. One who notices native plants will have no difficulty in making a highly ornamental collection from those which grow wild in our woods and swamps, and we have in former years pointed out and illustrated a great number of these; but most persons have not time for this, and prefer to buy at once. Very choice kinds may now be had at 25 cts. to 50 cts. each. The following will be a satisfactory selection, and it could be made many times larger without enumerating all the good ones. Calycanthus or Sweet-scented Shrub, Gordon's Currant, Deutzia crenata, double, and D. gracilis, Forsythia, Tartarian Honeysuckle, Hydrangea paniculata grandiflora, Persian Lilac, Fringe-tree (*Chionanthus*), Spiræas, several, Weigelia, several, especially Deboisiana and nivea, Viburnum plicatum.

Evergreen Shrubs.—We have already suggested that there are numerous dwarf pines, arbor-vitæs, and other conifers, and among the broad-leaved kinds our native Laurel (*Kalmia*) is one of the best. Rhododendrons are a little expensive, but one is a flower-show in itself, and where they can be afforded, they should by all means have a place. Our native Holly, the Holly-leaved Barberry, (*Mahonia*,) the Pyracanth Thorn, and Tree Box, are generally hardy in the colder states, but those who live further south can enjoy a great variety of evergreen shrubs that do not endure northern winters. Some taste can be displayed in the

Grouping of Shrubs, to produce a pleasing effect; they should never be trimmed into formal shapes, but the natural habit of each one be consulted when cutting is necessary. Fine specimen plants may stand alone upon the lawn, or groups of the same kind, or of different kinds so placed. In setting trees and shrubs, the matter of

"*Planting out*," as landscape gardeners say, should be kept in mind, and trees, and even shrubs, may be so placed as to cut off the view of objects on one's own place or that of a neighbor, which it is desirable to hide.

Trees and Shrubs, when planted, should receive as much care in the preparation of the soil and in handling, as those which bear fruit; they somehow manage to live if set out, as if they were fence-posts, but make grateful returns for good treatment. Give all evergreens—save those used for screens—abundant room to develope, and never remove a lower branch, unless it is diseased or dead. An evergreen with branches to the very ground is a beautiful sight, but one trimmed up is about as elegant as a hay-cock upon a gate-post.

Flower Garden.

A small corner in the back yard cared for by a lover of flowers, is as much a flower-garden as acres of beds of elaborate geometrical design kept by a "professional" and a large force of under-gardeners. We write for those who do their own gardening, and who no doubt derive as much pleasure from their humble grounds, as do those whose wealth allows them to employ others to do it for them. There are two principal styles of gardening; one in which flowers are used in masses to produce effects of color, either in a mass of one color or parts of a more or less elaborate design; in this the individuality of the plant is lost, and it only makes one in a crowd. In the other style, plants are chosen for their beauty, fragrance, curious structure, or other individual peculiarity which is best seen and enjoyed when the plant has a chance to develop its proper form; such plants are not set in any pattern, but where they will be best, of course reference is had to their hight. One style of gardening is for effect, the other for those who love plants. While we cannot deny that some examples of the first or bedding style are brilliant and showy, we are free to admit that our sympathies are with the other or mixed border, at least if confined to one. In bedding, the plants most used require to be grown under glass, and unless one has a green-house, a large outlay must be made for plants, or annuals used instead, which are never so satisfactory. In the mixed border there is a succession, from the snow-drops blooming in the last snow of spring, and the Colchicum, caught by the first snow of autumn. In this perennials, biennials, and annuals all find a place, and even house-plants can be plunged in their pots or turned out in it. If confined to one class of plants, we should choose

Herbaceous Perennials.—Among these is the greatest possible variety, and once planted they need not be disturbed for several years. These excellent plants have of late years been crowded aside by the more fashionable soft-wooded bedding plants. Herbaceous perennials may, if one wishes, be raised from the seed, but as they do not usually flower until the second year, most prefer to buy small plants. The number of really good things is large; we enumerate some that are readily obtained and excellent. Anemone Pulsatilla, one of the earliest in spring, and A. Japonica, var. Honorine Jobert, the last in fall; this last cannot be praised too highly; Columbines, all good; Chrysanthemums; Pinks, the hardy sorts; Bleeding Heart, (*Dicentra spectabilis*), the American, *D. eximia*, not so showy, but constant bloomer; Astilbe Japonica, (incorrectly Spiræa); Fraxinella; Day Lilies, (Funkia); Iris, of

various colors; Christmas Rose, (*Helleborus niger*), Perennial Candy-tuft; Lilies, all good, even our wild ones; Pæonies, both herbaceous and tree, very fine ones are now offered; Oriental Poppy; Pentstemons, the hardy ones; Phlox, a garden might be made of the different kinds alone, there is such variety, including the little *Phlox subulata*, or Moss pink; Spiræas, the herbaceous sorts. This list might be extended indefinitely, but as long as it is, we cannot omit Violets and Lily of the Valley.

Hardy Bulbs.—To have the best flowers, fresh bulbs must be planted every fall, but Hyacinths, Tulips, Crocuses, and the rest may be left in clumps from year to year, and flower tolerably; Crown Imperials and Lilies are best when undisturbed.

Tender Bulbs and Tubers are set in spring, taken up in fall, and kept over winter in the cellar, or where they will be neither too warm nor too cold. Gladiolus, Tiger-flower, Tuberose, Amaryllis, Dahlias, Cannas, and others, are all worth the trouble.

Annuals are tender and hardy; the tender, such as Balsams, Cockscombs, Amaranths, etc., need to be started under glass and not put out until the weather is warm. Many others may be sown in the open ground as soon as it can be worked. Candy-tuft, Mignonette, Drummond's Phlox, and many others every one knows; for the less common kinds, of which new ones come every year, reference must be had to the catalogues. Do not forget that the

Ricinus or Castor-oil Plant, among annuals, especially the variety *Sanguineus* or *Africanus*, is highly ornamental; a single plant 8 or 10 feet high, is very effective upon a lawn.

"*Foliage*" *plants.*—In this country bedding-effects are more readily produced with colored leaves than with flowers. Coleus, Amaranths, Achyranthes, Alternantheras, and others, either in ribbon lines or circles, make a brilliant show. For the various

Bedding Plants we refer to the catalogues which usually describe, and often figure the plants. We have enumerated here, to aid the novice, a few good things that will suit every one. One who wishes to excel in flower gardening should have the leading works, such as Henderson's and Breck's.

Greenhouse and Window Plants.

We can give but little space to these. They will now need more water and watching for insects; the treatment should now be such as will harden them off, and prepare for their removal to the open grounds. For this abundant airing will be required, but as there are frequent changes in the weather, a sudden chill must be guarded against.

Commercial Matters—Market Prices.

Gold has been up to 115¾, and down to 114⅛, closing March 12th, at 115¼, as against 114⅝ on February 12th. .. There has been a more satisfactory business reported in produce and merchandise, since our last....Breadstuffs have been in much better demand, and toward the close quoted stronger in price, with holders less eager to dispose of supplies. The export movement has been active, particularly in shipping grades of flour, (largely of City Mill and Minnesota product for South America.) in prime mixed corn, and in Canada peas, in bond. Wheat has been in moderate request for shipment. Barley has been quoted decidedly lower, under an increased pressure to sell, but closed steadier....Provisions have been freely dealt in, in good part for export, hog products attracting most attention, and closing higher. Butter has recently fallen in price 5@7c. ℔ lb. on the finer grades, under largely augmented receipts, and a slow distributing demand. Cheese has held its own well as to values, and has met with a fairly active inquiry, partly for shipment. Very wide fluctuations have occurred in eggs, according as the supplies varied. Sales of best marks of fresh stock have been made as high as 50c., and as low as 32@33c., closing at 35c.; demand fair....Cotton has been in fair request, closing, however, tamely, and in favor of buyers.....Wool has been quite moderately sought after, mostly on manufacturing account, closing weaker in price, in most instances, under more liberal offerings, partly of stock to arrive from California and Australia....Hops have been slow of sale at lower prices. ....Tobacco has been quiet at generally unchanged quotations....Seeds, hay, and straw have been in more demand, and held with more firmness toward the close.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Mar. 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	264,000	673,000	2,327,000	4,300	205,000	623,000
26 d's *last* m'th	216,000	513,000	2,811,000	9,200	218,000	874,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	331,000	2,321,000	2,763,000	28,000	297,000	989,000
26 d's *last* m'th	270,000	2,096,000	2,907,000	21,000	112,000	1,119,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1875	264,000	673,000	2,327,000	4,300	205,000	623,000
24 days 1874	317,000	1,912,000	411,000	141,000	153,000	486,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1875	331,000	2,321,000	2,763,000	28,000	297,000	989,000
24 days 1874	229,000	2,419,000	1,617,000	116,000	329,000	1,104,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Mar. 8, 1875	2,665,775	2,274,614	45,756	234,071	854,601	154,978
Feb. 8, 1875	3,269,000	1,408,485	50,899	266,928	915,137	137,120
Jan. 11, 1875	3,675,122	1,019,900	50,889	191,470	877,014	145,617
Dec. 7, 1874	4,513,396	1,220,973	15,925	168,891	890,899	135,622
Nov. 9, 1874	3,680,141	1,727,540	19,123	117,185	794,722	135,882
Nov. 10, 1873	1,720,338	3,133,896	22,907	232,942	755,153	82,674

4. *Exports from New York, Jan. 1 to Feb. 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875	366,888	2,492,099	2,766,588	13,168	90	22,264
1874	451,520	5,833,405	2,026,686	190,985	—	21,993
1873	325,386	868,737	2,778,029	1,004	6,700	4,977
1872	165,416	1,604,991	2,974,449	135,787	—	5,717

CURRENT WHOLESALE PRICES.

	Feb. 13.	Mar. 13.
PRICE OF GOLD	**114 5-8**	**115 3-4**
FLOUR—Super to Extra State	$3 85 @ 5 65	$4 40 @ 5 85
Super to Extra Southern	4 60 @ 7 25	4 60 @ 7 50
Extra Western	4 50 @ 8 00	4 90 @ 8 00
Extra Genesee	4 90 @ 6 50	5 25 @ 6 50
Superfine Western	3 85 @ 4 35	4 40 @ 4 90
RYE FLOUR	4 00 @ 5 20	4 00 @ 5 10
CORN-MEAL	3 90 @ 4 75	3 50 @ 4 75
WHEAT—All kinds of White	1 24 @ 1 32	1 25 @ 1 35
All kinds of Red and Amber	1 02 @ 1 26	1 07 @ 1 27
CORN—Yellow	82 @ 85	85½@ 86
Mixed	80½@ 82	81½@ 86
White	81½@ 85	85 @ 86
OATS—Western	66 @ 70	66 @ 70
State	66 @ 70	66 @ 70
RYE	90 @ 96	90 @ 96
BARLEY	1 20 @ 1 55	1 00 @ 1 32½
HAY—Bale, ℔ 100 lbs	55 @ 95	60 @ 1 00
STRAW, ℔ 100 lbs	45 @ 70	50 @ 85
COTTON—Middlings, ℔ lb	15⅝@ 16	16⅛@ 16⅝
HOPS—Crop of 1874, ℔ lb	32 @ 47	28 @ 42
FEATHERS—Live Geese, ℔ lb	35 @ 65	35 @ 65
SEED—Clover, ℔ lb	11⅛@ 11⅝	11 @ 11½
Timothy, ℔ bushel	2 80 @ 3 00	2 80 @ 2 90
Flax, ℔ bushel	2 20 @ 2 30	2 20 @ 2 30
SUGAR—Refi'g & Grocery ℔ lb	5¾@ 8⅞	5⅞@ 9¼
MOLASSES, Cuba, ℔ gal	33 @ 39	35 @ 45
New Orleans, ℔ gal	55 @ 66	60 @ 70
COFFEE—Rio (Gold)	17½@ 19½	16½@ 18½
TOBACCO, Kentucky, &c., ℔ lb	9 @ 25	10 @ 28
Seed Leaf, ℔ lb	8 @ 60	7 @ 55
WOOL—Domestic Fleece, ℔ lb	28 @ 65	27 @ 62½
Domestic, pulled, ℔ lb	27 @ 55	26 @ 50
California, clip	16 @ 36	16 @ 37
TALLOW, ℔ lb	8¼@ 8¾	8 @ 8½
OIL-CAKE—℔ ton	44 00 @47 50	44 00 @47 50
PORK—Mess, ℔ barrel	19 25 @— —	19 50 @19 62½
Prime Mess, ℔ barrel	18 00 @18 25	18 00 @ —
BEEF—Plain mess	9 50 @10 50	9 50 @10 50
LARD, in tcs. & barrels, ℔ lb	13½@ 14¼	13⅜@ 14¼
BUTTER—State, ℔ lb	20 @ 40	19 @ 35
Western, ℔ lb	15 @ 32	15 @ 32
CHEESE	6 @ 16¾	6 @ 17
BEANS—℔ bushel	1 40 @ 2 30	1 55 @ 3 15
PEAS—Canada, free, ℔ bu	1 15 @ 1 25	1 18 @ 1 28
EGGS—Fresh, ℔ dozen	33 @ 42	32 @ 35
POULTRY—Fowls	8 @ 17	15 @ 24
Turkeys—℔ lb	12 @ 18	15 @ 21
Geese, ℔ pair	1 37 @ 2 12	1 25 @ 2 00
Ducks, ℔ pair	— @ —	50 @ 1 25
PIGEONS, ℔ pair	30 @ 35	— @ —
GROUSE, ℔ pair	35 @ 50	— @ —
PARTRIDGES, ℔ pair	70 @ 1 00	— @ —
WILD DUCKS, ℔ pair	40 @ 1 50	75 @ 1 75
WILD TURKEYS, ℔ lb	15 @ 20	— @ —
QUAIL, ℔ dozen	1 50 @ 1 75	— @ —
HARES, ℔ pair	45 @ 50	40 @ 50
RABBITS, per pair	35 @ 40	35 @ 40
TURNIPS ℔ bbl	1 25 @ 1 37	1 37 @ 1 75
CABBAGES—℔ 100	5 00 @ 8 00	8 00 @11 00
ONIONS—℔ bbl	2 25 @ 3 50	2 50 @ 3 50
POTATOES—℔ bbl	1 50 @ 2 12½	1 75 @ 2 75
SWEET POTATOES—℔ bbl	3 50 @ 4 00	3 00 @ 4 00
BROOM-CORN	9 @ 15	9 @ 15
APPLES—℔ barrel	1 00 @ 2 25	1 25 @ 2 00
CRANBERRIES—℔ bbl	4 50 @ 9 50	2 25 @ 9 50
GREEN PEAS, new, ℔ bushel	1 85 @ 1 90	1 90 @ 2 10
SQUASH, ℔ bbl	1 75 @ 2 25	— @ —

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Feb. 15	7,146	80	621	18,079	24,688	50,614
Feb. 22	7,600	93	673	23,586	31,804	63,756
March 1	6,260	167	657	19,851	26,280	53,215
March 8	5,561	40	510	26,193	23,223	55,567
March 15	9,358	122	756	21,552	24,300	56,088
Total for 5 Weeks	35,925	502	3,247	109,261	130,305	279,240
do. *for prev. 4 Weeks*	33,826	428	2,788	95,483	127,945	260,470

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	7,185	100	649	21,852	26,061
do. do. *last Month*	8,456	107	697	23,870	31,986
do. do. *prev's Month*	7,452	79	774	18,860	33,734

Beeves.—The influence of the lessened demand, consequent upon the season of Lent, tended towards lower prices at the opening of the month's business. This adverse influence was exerted mainly upon extra stock, which gave way, while the low grades remained firm. As the month advanced, the market became strong, with an advance of ¼c. ℔ lb. all round. At the close a further gain of ½c. ℔ lb. was made upon low and middle grades, while for extra the market was only a shade stronger, selling at 13¼c. to 13½c. for choice, and 14c. for fancy steers, to dress 58 to 60 lbs. to the gross cwt.; ordinary to prime lots, to dress 56 to 58 lbs., sold for 11@13c. ℔ lb., and Texans at 10@12¼c. ℔ lb.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Feb. 15	8 @14 c.	10¼@11¼c.	10¾c.
Feb. 22	8 @14 c.	10½@10¾c.	10¾c.
March 1	7½@14 c.	10¾@11½c.	11 c.
March 8	9 @14 c.	11 @12 c.	11½c.
March 15	9 @13¾c.	10¾@11¼c.	11 c.

Milch Cows.—The market for cows has been entirely without change, the demand has been fair, and good stock has moved off briskly at full prices, while poor have been dull and slow of sale. Prices at the close were firm, ranging from $43 to $98 for cow and calf....**Calves.**—The trade in calves has been brisk and steady at full prices. Milk-fed veals have sold quickly at 9½@10½c. ℔ lb. for ordinary to good: grass calves brought at the close 4½@5c. ℔ lb., or $10@$15 ℔ head. One lot of 39 brought $12.50 ℔ head, another of 14, averaging 380 lbs., brought 4½c. ℔ lb....**Sheep.**—The market for sheep has been active, with liberal transactions; but the excess in receipts have kept prices from advancing. Poor sheep sold for 5¾@6c. ℔ lb., fair to good at 6½@7½c., and extra at 7¾@8c.; three car-loads of choice brought 8½c. ℔ lb ...**Swine.**—No live hogs have been offered the past month. For dressed the market has been without change and firm, at 9¼@9½c. ℔ lb. for city dressed, and 8⅝@8¾c. for western.

To be Had without Money.—There will be found upon our Premium List for the year 1875, a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but a little *well directed effort*. Among these are: **Beautiful Silver-Plated Articles—Fine Table-Cutlery—Gold Pens with Silver Cases—Children's Carriages, Swings, etc.—Watches—Pianos—Melodeons—Pocket-Knives—Guns—Cultivators—Sewing, Knitting, and Washing Machines—Books, etc., etc.**—Send for our Illustrated Premium List, and see how easy you can obtain one or more of these good and desirable articles.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our Western Office.—Our friends in the West are reminded that we have an office at Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* are taken there, and sample copies of the paper and chromo are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

Special Offer.

The Beautiful Chromo, "The Strawberry Girl."
[Size, 14×20, in 18 colors.]

To every subscriber, whether new or old, whose subscription for the year 1875, whether single or in a club, shall be received while this offer lasts, and who shall send with his subscription 50 cents extra to pay for mounting, postage, etc., we will send one of the beautiful pictures, **"The Strawberry Girl,"** which has so delighted those who have seen or received it. This chromo will be mounted *on muslin*, with directions for putting it on a stretcher for framing. We have but a limited number of these fine pictures in stock, and this offer will continue only while any remain. ☞ To every subscriber for the year 1875, whether new or old, who has not called for any chromo, and who shall send us 50 cents additional to his subscription while this offer lasts, we will send one of "The Strawberry Girl" as above.

Four Extra Pages.—Our subscribers will notice that we give them, in this number of the *American Agriculturist*, *four extra pages*, *i. e.*, two of valuable reading matter, and two of advertisements; the paper for this month containing forty-eight pages, (including cover), instead of forty-four, and this without additional cost to our readers, as the postage is now paid by the publishers.

"Good Men and True" are the kind that are welcomed to the business columns of this journal—the other kind are not wanted here, no matter how much golden "toll" they may offer at the entrance-gate (or advertising desk). Patent medicine men, who publish long lists of "symptoms," to make people believe they are sick, so that they will buy their nostrums, will please take their custom to "the shop over the way"—*ditto* all sorts of swindlers—*ditto all* who have not the *ability* and *intention* to do just what they promise to do in their advertisements. We want here only those advertisers upon whose words and promises our readers can implicitly rely. When our readers open correspondence with any of our advertisers, in ordering, or writing for circulars, please intimate to them that you are members of the "*American Agriculturist* Family," by way of introduction, and you will be likely to receive special and courteous attention. A look through the business columns will show that the country is not moribund, by a long ways. Such a look will doubtless afford some profitable suggestions also.

A MILLION PEOPLE, at least, in the country and in villages, are **just now** planning out Spring work in their fields and gardens. What a help it would be to them to have the information, the hints, and suggestions, which the current numbers of this journal give, and will give all Summer. Single hints save or bring back many dollars. Just now, in this month of **April,** please explain this matter to some of your neighbors, get and forward their names, and in return the Publishers will make you a present *worth having*. See what they offer in the **Illustrated Premium List.** If you have not one at hand, send word by postal card, and the Publishers will forward you one free.

Glover's Insects.—The museum at the Department of Agriculture at Washington is one of great value and interest, and one who sees the great number of specimens and their admirable arrangement, is surprised when told that this is the almost unaided work of the director, Prof. Townend Glover. The museum is indeed evidence of remarkable skill and industry, but this is only a small part of the work accomplished by this most industrious and skillful man. He has for years collected, drawn, and engraved with his own hands the insects injurious to vegetation in their various stages; engraved them on copper plates after office hours, and they now form a collection of immense importance. The French government several years ago recognized the value of Mr. Glover's work, by presenting him a gold medal. The American government has recognized it by —nothing. Not wishing his plates to remain useless, Mr. G. has, at his own expense, commenced their publication in families. He publishes only 50 copies, pays the expense himself, and gives them to entomological societies and other scientific bodies, and to his personal scientific friends. In the volume of Diptera now before us, the notes and explanation of the plates are all in his own remarkable hand—as neat and almost as clear as type, which have been transferred and printed by lithography. When we consider the immense amount of labor involved in the production of these volumes, the contribution to science is no ordinary one, and he really gives more than the wealthy men whose contributions of a few thousands are heralded wherever newspapers are read. Congress can appropriate thousands to buy and distribute useless seeds, but for a useful and creditable work, not a dollar. We know that Prof. Glover will not thank us for this notice, but we feel it is due to him. Do not write to ask for copies of his work. Every one is disposed of, and not one for sale.

Wooden and Brick Buildings, is the title of a most valuable contribution to the list of architectural books, just published by A. J. Bicknell & Co., N. Y. It consists of 2 vols., in large quarto, and contains 160 plates, giving perspective views, elevations, plans, and elaborate details of buildings of all kinds, for country and city. These are accompanied by descriptive, letter press, specifications, form of contract, etc. An important feature of the work, is that the designs are contributed by over forty different architects, including some of the leading names in the profession. Being from different architects, residing in different parts of the country, the designs present a remarkable variety, and can not fail of a wide appreciation. Price $18. The vols., if desired, may be had separately. Sold by the Orange Judd Company.

Please not Confound Names.—The name at the head of this journal, with Washington's motto, was adopted over **33 years ago.** It was, as its name implies, originally designed to be the "AMERICAN *Agriculturist*," and that is its present aim, though it is largely taken and read in almost every other country. This particular *name* is justly its peculiar property by moral right, as well as by legal copy-right.—But while this has been partially conceded, many attempts have been made, and are still continued, to abstract a portion of its good name and good will, by naming other journals as near like this, as possible, without actually infringing upon its legal rights. A score or so of such journals have died in the effort; but one or two are still in existence. Those who want this journal, will therefore please not confound its name with "Continental" *Agriculturist*, "United States" *Agriculturist*, "National" *Agriculturist*, —in short, with any other "*Agriculturist*." To call it the "American Farmer" would not express its purpose and aim. While treating largely of farm matters, its scope is wider; it is for the Farm, the Garden, and the *Household*, in City, Village, and Country.

The American Pomological Society.—The President, Col. Wilder, notifies us that the meeting for 1875, is appointed for Sept. 8th, 9th, and 10th, and will be held in accordance with the invitation of the Illinois State Hort. Society. Chicago is such a central place that a grand gathering may be expected.

Getting the Agriculturist Cheap. —Some of our subscribers do not understand how publishers of certain journals can offer to send both the *Agriculturist* and their own paper for the subscription price of the *Agriculturist*. We have nothing whatever to do with any of these arrangements, any one who chooses can purchase the *Agriculturist* at our wholesale rates. Our terms are published plainly, and are the same to all; if one takes 20 or more copies he gets them for $1.10 per year each, postage included, and he can sell them for what they cost him, give them away, or use them to advertise his own paper or other wares. It is a matter entirely beyond our control, and if there is any advantage to be derived from these operations, the opportunity is open to all alike.

Unfortunate Advertisements. — Lightning will sometimes strike a house that is thoroughly "protected" by lightning-rods, and sometimes—we are happy to say about as rarely—an advertisement finds its way into our columns, which should have been excluded. We take every possible precaution to keep out all advertisements that are doubtful, as well as those that are on their face improper; to show how these unfortunate advertisements sometimes get in, we cite the case of a "Paper Company," one of which concern, when asked for reference, gave one of our own firm; this gentleman knew the paper-company man some years ago as a member of a business-house in excellent standing, and on the strength of a former good reputation of one of the parties, the advertisement of the Paper Company was admitted. It is now dropped on account of the numerous complaints of its unsatisfactory way of doing business, though we have had no evidence of actual fraud....A very unfortunate case was the publication of an advertisement of J. B. Williams & Son, Belleville, Ill., offering live stock, which appeared last month. Recently it has been shown that there is no such concern as Williams & Son at Belleville, but the name was assumed by one Stark, under which to carry on his swindling operations. This Williams, or Stark, was arrested by the local authorities as a swindler, and released on bail, but subsequently taken by the U. S. officers on the charge of using the mails for fraudulent purposes. While it is annoying to know that we were deceived, we can congratulate ourselves that our readers can suffer no loss by our act, as the advertisement in the March number could not have reached them until after the fellow was arrested. The postmaster at Belleville has since the arrest returned all letters to the writers, whose name was given on the outside, and no letter reaching Belleville after Feb. 23d will get to the rascal. Of course an occurrence of this kind will only lead to still greater circumspection on our part.

The Daily Record.—Published by Hastings & Co., N. Y., annually. Last year we commended this from its appearance, now, after an experience of a year, we have shown our opinion by purchasing one for ourselves, and another for our gardener. It is exceedingly comprehensive, and for one who wishes to keep a record of events on the farm, in the garden, or in any kind of business, it is just the thing.

SUNDRY HUMBUGS.—The monthly task of writing this column is not a pleasant one. As we open our budget of accumulated evidence, we immediately feel that we are in bad company; the meanness, trickery, hypocrisy, and downright villainy, that are spread out before us give for the time a very discouraging view of humanity...."Mean enough to steal the cents from a dead pauper's eyes," has been used to express

THE HIGHTH OR DEPTH OF MEANNESS,

but there are people in Kansas meaner than that; they steal bread from their starving, and coal from their freezing fellows. There is some one at Holden, Kansas, actually mean enough to trade on the sufferings of the people to carry on a swindle. We have in hand two letters received by two of our friends in this city, which set forth in the most harrowing manner, the sufferings of the writer's wife and children for want of food and fuel. The recipient of one letter was so affected as to send some money. These letters are both dated Holden, Kansas, are written in the same hand, and one is precisely in wording and bad spelling the copy of the other, but one letter is signed B. Boyd, and the other H. Brown, in the same hand. Here is evidently a swindle of the meanest kind. Holden is too small a place to have its population given in the Gazetteer, and no doubt the postmaster knows personally every one who gets his letters there. If a fellow comes for letters for H. Brown or B. Boyd, he should not be allowed to have them, as either one or the other of these names is assumed for swindling purposes, and the law makes it the duty of the post-masters to refuse such. The rascal if caught should be kept on a diet of grasshoppers and be made to read his letter before each meal....It looks very much as if the

CHEAP SEWING-MACHINE

swindle were started again under a new name. We are watching the thing, and in the meantime advise our readers to exercise caution in this matter, and not send money where they will not probably get its value in return....Nothing is more astonishing than that any purchasers can be found for the

CHEAP JEWELRY

sold all over the country. We must confess that when we receive a complaint from one who has been victimized, we do not feel sorry at all; the whole thing is such a barefaced imposition that we cannot pity one who expects to get for 50c. or a dollar anything worth half those prices. One young man in California sent all the way to Portland, Me., for a watch-chain of "Chabanneau metal," price 75c., and sends it to us to show how it looked after three days wear. The young man thinks he has been swindled—we think it quite as good a chain as he could expect for 75c. They probably cost very low by the peck, but then the seller must make a handsome profit to pay for advertising. The swindle is in representing that the chain would be equal to gold in "actual use and beauty," and the folly consists in your believing it. These cheap jewelry chaps turn up in queer places. There is one at Allen, Mich., which has on its circular an immense building, and gives the impression that a large business is done there. Now we learn that the chap doesn't live at Allen, but only visits it occasionally, and advertises another business from another town in the same county. The circulars of the Michigan concern which offer articles of "Brilliantine Gold," say: "As we are accustomed to cross the Atlantic Ocean every year for the purpose of enriching our art stores with the productions of European artists, we immediately sailed for Europe. As a matter of course, we always sojourn for a short time in Rome and other cities of Italy, and there we conceived of the business which we are about to set before you."—George Stinson & Co., Portland, Me., offer articles of "Chabanneau metal," and they say in *their* advertisement, "For a long time it has been our custom to cross the Atlantic Ocean every year for the purpose of enriching our art stores with the productions of European artists. Of course we always sojourn a short time in

Paris, France, that great center of art, and there we conceived of the business that we now put before you."—The coincidence between these two circulars is certainly most remarkable, and no doubt one will accuse the other of plagiarism, but to outsiders it is all very funny.... The various dodges heretofore resorted to to make persons buy lottery tickets, are eclipsed by Egerton & Co., Camden, N. J. One of that concern has

DREAMED A DREAM.

We are quite sure of it, for the statement has been lithographed—and very neatly too—and sent all over the country; very pretty reading it is. It is a confidential communication that one of the firm "night before last"—there is nothing like being precise—dreamed that he saw a $50,000 prize drawn on ticket of such a number and class, and that "we bought that ticket with you." Singularly enough they found among their tickets one bearing the very number, so Edgerton & Co. write to the person who was dreamed about, telling him that a similar dream came true several years ago, that the ticket is $20, and if he will send $10, they will go halves, and have labeled the ticket subject to his order and all that. As we have quite a lot of these confidential dream letters, all giving the same number, we must give "one of our firm" the credit of being the greatest dreamist of modern times, or what is more likely, the firm itself is a first class humbug... Apropos of what we said some months ago, on entering into business relations with perfect strangers, a correspondent in Conn. sends an account of what happened in his town; two plausible chaps who professed to hold a patent right for making

BUTTER FROM SUET,

interested one of the citizens, formed a partnership with him, got his money, and left him. We do not feel very badly over this case. Was not the Connecticut man ready to cheat the community by making and selling as butter that which was something else? and now having got cheated himself, we can't see what he has to complain about. "Sauce for the goose, etc."....Some of the country papers have been victimized by

BOGUS ADVERTISING AGENTS,

and all our country friends are advised to be cautious; one chap in New York is at times an advertising agent, again a "doctor," a seller of remarkable cabbage seeds, and various other occupations.

IN MEDICAL MATTERS

there is no novelty to report, and even the old things seem to be running very slow....An amusing application was recently made to us by a citizen of Delaware, apparently a man of excellent intentions, but not a reader of the *Agriculturist*. This gentleman has a "root" which for forty years has "never failed" to cure pleurisy and various other things; he is a poor man, hopes to make some money out of it, and wishes to get his medicines properly brought out. Some of our subscribers, he says, have advised him to apply to us—of all persons in the world—and he proposes to send us some root to try ourselves or on our friends, and wants us to "take hold of it," and is sure that with our endorsement it will sell. As this man has not read our paper, he of course could not know our position in regard to such matters, but we are very sure that any "subscriber" who advised such an application to us must be a wag on the look out for a chance to play a joke. Our position is very briefly defined: we will not countenance in any manner, any secret "remedy" or so-called medicinal preparation whatever, no matter how put up, or by whom recommended or sold, and are fully convinced that public safety demands a law for the prevention of the sale of every secret medicine. As to "trying" any root or other thing which is a secret, we would not "try it on a dog," much less upon any human being.

"LOAN AND REAL ESTATE BROKERS"

in New York are advertising largely away from home the immense sums they wish to invest on real estate, and are flooding portions of the country with their circulars. As in most parts of the south and west money is needed to carry on agricultural operations, these offers are speedily caught at. We have numerous inquiries about one of these "brokers," as the demand of $10 in advance properly arouses suspicion. One would suppose from the pretensions of the circulars of this concern that it would be doing a large business, in a conspicuous place, with clerks, book-keepers, and all that. The fact is that the parties occupy an obscure office, with a hole in the door for letters to be put through. It looks as if the whole end and aim of this concern was, to get that $10 in advance, and letters from the unfortunates who send it, can be poked through that hole in that door very nicely. "Go slow" with these "Loan and Real Estate" chaps, who are unknown to you. There are men in the business, who are highly honorable, but these do not have a hole in the door as the only means of communication with them.

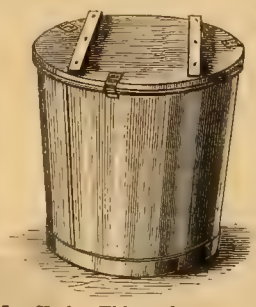
The Death of M. L. Dunlap.—The news of the demise of Mr. Dunlap, came to us just too late for our March number; it took place at his residence at Champaign, Ill., on February 12th, last. He was born at Cherry Valley, N. Y., removed early to Illinois, and since 1857 has resided at Champaign. He was an enthusiastic and successful farmer, an active advocate of agricultural education, and a prolific writer upon agricultural topics; he had been connected with several papers, at one time editing the Illinois Farmer, and of late years was the well known correspondent "Rural," of the Chicago Tribune. Our acquaintance with Mr. Dunlap was but slight, but sufficient to show the genial qualities which so endeared him to a large circle of friends.

GOING RIGHT ON.—For the good things in our Premium List, the offers go right on to June. If every reader knew and appreciated the real value of these various articles, and how easily they are to be obtained without money, there would be ten to twenty thousand, or more, who would begin now and secure one or more of them. A few names of subscribers, easily obtained, will secure a selection from a large lot of good things. Look over our **Illustrated** Premium List again, or if you have not one on hand, a postal card sent to us will bring you one free.

Illustrated Catalogues.—Those Seedsmen and florists who embellish their catalogues with colored plates, find that they make them too attractive; not only are they sometimes stolen before they reach their destination by mail, but they are ordered by persons who have no intention of buying a seed or a plant, but merely wish to get the showy pictures. School boys and girls send for these catalogues, and others who are old enough to know better, resort to various dodges to get a number of them. A chap at Fountain, Pa., has sent postal cards to two of our dealers, some scores of them, asking for catalogues; these cards are all in the same hand, but with different signatures. Those chaps at Fountain should know that this is very mean business; we have the names of some engaged in this kind of pilfering, and they had better stop it.

To use Ashes.—"R. M. B.," Ogden, W. T. Wood ashes should be spread upon the surface of the ground at any time that is convenient; it is not proper to mix them with manure.

Metallic Butter Package.—"J. W. H.," Oneida County. The numerous inquiries that have come to us for a metallic butter package has made it advisable that we should give the accompanying illustration of one that seems to meet the need of dairymen. It is a light pail of tin, with a wooden cover fitting closely and held down by three metal straps. An iron rim around the bottom adds to its durability in use. It weighs about 5 pounds, and holds 50 lbs. of butter. It is made by the Metallic Butter Package Company, 150 Chambers St., New York. This package cannot absorb water, and the weight is therefore constant, avoiding all trouble about disputed tares when the butter is sold. It keeps entirely sweet, and if tightly closed the butter remains perfectly sound. There is no leakage of brine, and consequently no loss of weight and no admission of air to the butter from shrinkage, to the great damage of the quality. These packages may be made of any size, and the demand for small pails of 6 to 12 pounds can be met by this kind of package better than any other we know of.



Hedges in Kentucky.—"W. H.," Louisville. A plant that is native is not likely to make a better hedge than one that is not. The Yellow and Honey Locusts are very different trees, while the first-named is worthless as a hedge-plant, the other is one of the best. The Osage Orange will succeed with you even if not a native, and so far as suitableness to climate goes, there is no choice between this and Honey locust. Osage Orange has denser and brighter foliage, the other grows more rapidly and is more thorny. The seeds of Honey locust often grow without preparation, but it is safest to scald them before sowing. The seeds should not be sown in the hedge-row, but in a seed-bed, where they are to be thinned, weeded, and kept well cared for, if sown in place weak and strong will be together, and the strong overpower the weak. The seedlings should be taken up in the fall, all imperfect and all thornless ones thrown away, and the rest assorted into 2 or 3 sizes, so that plants as near alike as possible will be in the same part of the hedge. The plants are to be heeled-in until spring and then set. One foot apart is a suitable distance for Honey locust, but some set them six inches and others go to the other extreme and plant 2 or 3 feet apart.

The Snyder Blackberry.—In February last we published a note from Steele Brothers, Laporte, Ind., in which it was stated that the Snyder had not done well with them. As we can only learn the value of a new fruit by obtaining evidence from the parties who cultivate it in different localities, we gave this as a contribution to the history of the Snyder. Mr. J. R. Gaston, of Normal, Ill., who, though not a nurseryman, has been instrumental in introducing the Snyder, thinks that the report of Messrs. Steele shows that they are in an unfavorable location for blackberries, rather than that the Snyder is not hardy, and sends us abundant evidence to show that the variety has proved hardy in various localities, including letters from those who have cultivated the variety at La Porte, and have found it preferable, in their view, to the Kittatinny. From the testimony as it now stands, it would appear that, as may readily happen, the experience of Messrs. Steele was exceptional. We cannot give space to the testimony furnished by Mr. Gaston, but it is quite as positive for the hardiness, productiveness, and good quality of the fruit as that of Messrs. Steele is the reverse. With small fruits especially, soil and locality make a wonderful difference, and it would be remarkable to find a blackberry which did equally well everywhere. In discussing the merits of a new variety, our only object is to give our readers the facts, and when, as in this case, it is one we have not fruited, we furnish the best evidence we can get. The fact that we allow Mr. Gaston to advertise the Snyder in our columns, is sufficient evidence that we think it worthy of a trial.

A Book on Farming. — "Reader," Richmond, Va. Allen's New American Farm Book, (price $2.50), is perhaps the best book on general farming we know of. It does not, however, contain any information as to preventing fences being stolen for firewood. That is a question which has puzzled many, and we know no solution for it, except to live where fences are not used, or amongst honest people, or use wire fences.

The Ecraseur. — "T. R.," White Pine, Mich. We would advise you to use the ecraseur in preference to the torsion forceps and clamp. These were described in the *Agriculturist* because some surgeons may be prejudiced in their favor, but for unprofessional operators the ecraseur is altogether the easiest, safest, and most rapid instrument, and should be used in all cases, and as to professional men the great majority of them would choose to use it before the clamp and torsion.

Cool Springs after Warm Winters.—Prof. Dove, of Berlin, the veteran meteorologist, announces this as a pretty well proved tendency, at least for Europe. He says that a mild January is generally followed in the interior of continents by a mild May, on north and east coasts by a cool May, on the Atlantic Ocean again by a May milder than usual.

Machine Rock Drill.—Thos. C. Baker, of Loudoun Co., Va., asks about the Waring Rock Drill—whether it would pay him to use one in quarrying 50,000 bushels of limestone per annum. As fully 75 per cent of the cost of quarrying and removing stone is consumed by the mere drilling of the holes, and as a good power-drill will make these holes for one-tenth the cost of hand-drilling, there would be a large margin of profit in the investment, to say nothing of the fact that the lightness and portability of the drill, would allow of its being used, when not otherwise needed, in quarrying for other people. The drill costs $600. Interest, and all necessary renewals to keep it permanently in good condition, would not amount to more than $75 per year, or say one month's wages of two strikers.

Peach on Poplar.—We thought we had heard of all the tricks and lies of the rascally kind of tree agents, but there is a chap who has been around Albion, Ill., who has something quite new. His peaches are grafted on the "Columbia," (whether of the "Hail" kind or not is not stated), "Poplar." That there should be men wicked enough to make such representations is lamentable enough, but it is still more melancholy that there should be people who believe them. We are glad to know that one did not swallow the story. We would not say a word to injure honest nursery agents, and it is a pity that they are in the same business with the scoundrels who sell "self-pruning grape-vines" and peach-trees grafted on "poplar."

Basket Items continued on page 157.

Stone-Boats.

A stone-boat is a useful thing, even upon a farm, where there is not a stone. It is handy to carry barrels or other heavy things about, but especially

Fig. 1.—STONE-BOAT WITH RUNNERS.

so for taking plows, harrows, or bags of seed, to and from the fields. Fig. 1 shows one of these vehicles which is made of two curved runners connected by means of cross-bars, the ends of which

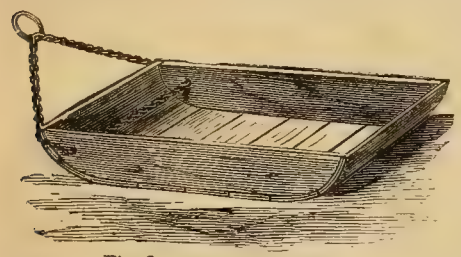


Fig. 2.—PLANK STONE-BOAT.

are fitted into inch and a half holes in the runners, and wedged firmly to keep them in their places. One of these boats will be found very useful upon a dairy farm, where green fodder is fed, as it may be taken to the field, loaded, and drawn into the barn and through the feed passage by one horse. Figs. 2 and 3 show other kinds of boats made of plank sides with bottoms of oak boards, in one case laid crosswise, and in the other case lengthwise of the boat. These illustrations speak for themselves, rendering further description unnecessary, except the fact that they may be made of any desired size—six feet long and three feet wide being perhaps the most convenient shape for general uses.

Extra Plowing in Market Gardens.

BY PETER HENDERSON.

Like most farmers and gardeners, we have always found ourselves short of horses for spring work, and in consequence the land plowed up in the previous fall, has been simply harrowed as soon as dry enough in spring, the teams started to haul out the manure, men and horses doing their best to get in the crops as quickly as possible. Last spring, (1874), I happened to have an extra team on hand, and having nothing else for them to do, I plowed and harrowed all my ground that had already been so treated the previous fall, before hauling out the manure. The result showed that the extra labor was well repaid. I never before had such luxuriance of growth in every crop we put in. From the

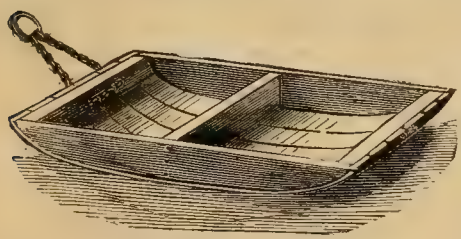


Fig. 3.—PLANK STONE-BOAT.

driving necessities of spring work, I never before availed myself of this extra or double plowing though convinced of its value. In summer, we have almost invariably plowed again in planting our second crop. The practice being that as soon as a spring crop of cabbages, beets, etc., was marketed, to plow and harrow the ground, then if plants for second crop are not ready to set out, it is so left for a few days until they are ready, and the land plowed again in such quantity as can be planted that day, the great object being to set the plants on the freshly turned soil. I have seen some of our market gardeners wait weeks for rain before planting out crops of cabbage or celery, and then when it came, set out their plants on land that had been plowed and harrowed weeks before, and which was now covered with weeds. The result was that the plants were placed on a rain-battered, weedy surface, which greatly retarded their growth, besides entailing great additional labor in keeping the land clean. If land in this condition had been plowed and harrowed in just such quantities as could be set out in the afternoon, no matter how dry, and the plants kept dripping wet while planting, or their roots "puddled" in mud, and if the plants were properly "firmed" at the roots, there need be no fear that one plant in a hundred will fail, even should continued dry weather ensue. I have put out acres of celery and cabbage in this manner in July, without having a drop of rain for a month after planting, with excellent results. All experienced cultivators know the importance of having a loose surface for the retention of moisture, and this second or extra plowing of the soil in dry weather, gives just that condition. This additional plowing and harrowing also so pulverizes the soil that all such operations as cultivating, hoeing, or weeding, are performed with much less labor than if only one plowing had been given. Of course the results from extra plowing will be more observable on a stiff soil than on a loose one, but in either case planting on a freshly turned up soil is of importance, and especially so is the "firming" or pressing the earth compactly around the roots of the plants, should never be neglected.

The Homesteader.

As spring opens and verdure again covers the vast prairies only as yet here and there dotted with settlers' cabins, the homesteader is seen, as we saw him a score of years ago, on the march towards the west, with all his worldly goods and his family about him. The scene pictured upon our first page is an illustration of what has occurred in the history of our country for a century or more in the past, and may occur for a century or more to come before our broad territory may be called settled, and our people become content to stay in the homes where they were born. When this happens this picture will become of interest as showing what a restless people we were. Now, it will be interesting to those who are content to stay at home, as well as to those who are not, as showing the best way in which a man who seeks a home in the far west may go there. To go on to the wide prairie improperly provided for the journey, is a mistake that may result disastrously. The settlers who suffered so much during the past winter have been those who had nothing to fall back upon when their corn was consumed by the locusts. Those who had a flock and some stock, and were careful to put up some hay, have been able to get through the winter without distress, although they may have been more or less inconvenienced. Land is useless to those who are without means to cultivate it, and the past year has been a warning to those who would recklessly go upon a prairie homestead with little or nothing besides their bare lands. Such a settler as that seen in this picture is well prepared for any emergency. In twenty-four hours after his arrival he can begin to make something out of his land. His cows and sheep will be working for him, and his tent and wagon make a sufficient shelter for his family while he breaks ground for his sod-corn, and by and by he may build his house. But the settler who has no means cannot fail of suffering greatly before he can make himself a home, even if he ever does make one. The winter comes and finds him unprepared, and his sufferings may be intense. Where every man is a laborer, there is no demand for his labor, and he is utterly without resource, if his first crop from any cause should fail. Now that the season for emigration westward has begun, we would caution those who are not well prepared, against venturing on to the frontier. Homesteads are now only to be had far out from railroads and villages, and those who can afford to buy a tract of land near a railroad, and in the midst of settlements two or three years old, can more profitably do so on the easy terms offered by the railroad companies than take land ten miles away for nothing. They have a market for their grain, wool, or stock, at the railroad, and they live within the sound of the church and school bells. Where a locality has been settled a few years, there are corn-cribs, granaries, houses, barns, and fences to build, and a demand for labor soon arises which helps the new comer. A man may go into the woods with nothing but his ax, better than out upon the prairie with nothing but his plow, because with his ax he has unlimited fuel in the woods, while on the prairie he must buy coal or go without fuel. This difference is frequently forgotten in thinking of the advantage of the prairie all ready for cultivation, as compared with an uncleared forest. Had there been less reckless settlement of the frontier by persons unprovided with means of support, much of the suffering of the past winter would have been avoided.

A House Costing $900 [or $800 to $1,000.]

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N.Y.

The plans here given, are of simple design, intended to meet the large and increasing demand for low priced country or village houses, having at the same time some architectural beauty. Without this latter feature, a comfortable house of this size can, in many places, be erected for much less than $900 even....The house here described provides for as

Fig. 1.—ELEVATION OF HOUSE.—Scale, 8 feet to 1 inch.

much room as a small family would require, while at the same time it admits of future enlargement, as one's necessity or means may indicate, by additions, ells, or wings, at either side, or rear. In all cases, when planning small houses, it is best to provide for such enlargements. The triplet window in front is so arranged that it can be readily changed to a Bay Window when that improvement can be afforded, without marring the rest of the wood-

work, or the harmony of the front elevation....The Cornice of the main building is bracketed, and projects sufficient to relieve it of the stunted look so

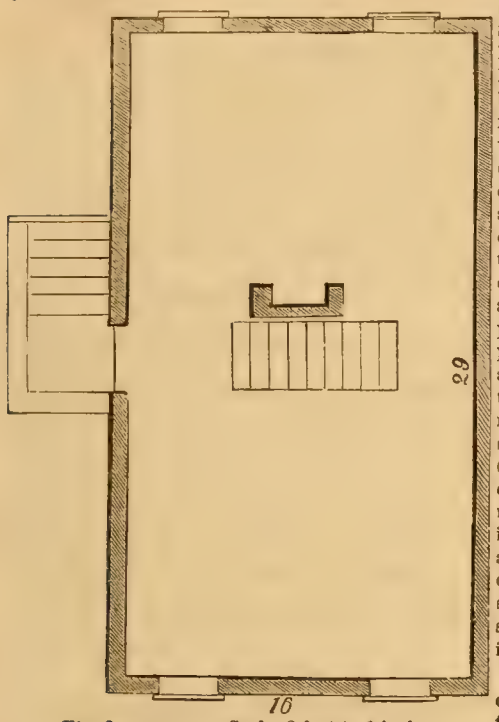


Fig. 2.—CELLAR.—Scale, 8 feet to 1 inch.

common to country houses. The brackets are made of 2x4 inch timber, in three pieces each, mitred to the angles required, and nailed together, (see fig. 6), making an effective support and pleasant appearance....A large saving in expense of foundations is secured by the following method of construction, (see section of foundation and frame, fig. 5). The excavation is made for the cellar 2½ feet deep. A foundation of 8-inch brick-work, 3 ft. high, or 6 inches above the level of the ground only is required. A Sill of 3x8 inch timber is laid on, and "flush" with the inside of the wall, to provide nailing for the wainscoting of the basement, if it is afterwards finished off....The beams or joists for the first floor are supported by a plank strip 5 inches wide, let into the inside of the frame at a proper hight, and securely fastened with heavy nails. The other parts of the framing are executed, and the whole raised in the usual manner.... The inclosing, or siding, below the first story, is of 10-inch boards rabbeted and cross-grooved in imitation of large stone-work, and painted in contrast with the principal body of the house, and the water-table is put just above them....Many small houses in the country are built without any permanent foundation, but are temporarily supported on posts set in the ground, and "boarded down." They are always shaky, and doubtful while they stand, and are frequently blown over altogether. As will be readily seen, the above method provides for the saving of one-half of the mason-work in the foundation. In many places stone is abundant, and will answer the same purpose as brick in this case, except for the 6 inches above ground, and the laying up of a single-face wall, 2½ feet of rough stone and mortar, would cost but a trifle. If the cellar should be finished at any time for basement purposes, these walls would be much drier and more healthful than when the walls are entirely of masonry. In this case it would be preferable to have the foundation walls, or the wood-work above, 6 inches higher, so as to have the basement rooms 7 ft. in the clear.... Several houses have been built on this plan in villages, and in most cases it has been decided not to have any rear outside door for the first story (fig. 3), but to wait until a kitchen could be finished in the front part of the cellar, when the rear entrance would be by the area to the kitchen. In the plan, (fig. 3), we have indicated two rear windows, but a door may take the place of either of them. We have also indicated by dotted lines where pantry, sink, etc., may be placed in the corner, according to the wishes of the proprietor....There is but one chimney. The parlor is heated by running a stove-pipe through earthen thimbles placed in the partitions under the stairs, to the chimney, which is perfectly safe, and no heat is lost. When desired, a fire-place, or stove-pipe flue, may be carried up through the parlor, as well as through the living-room, and the two be brought together above the stairs into one chimney....The **Second Story,** (fig. 4), may be divided into three rooms, the front one being 12 x 15 feet; or, if preferred, this front room may be divided into two smaller rooms, as indicated by the dotted lines. One may be 8 x 12, and the other 6½ x 12. The latter would be large enough for an ordinary bed, (4½ x 6½ feet), with stand or chair by the window; and in this case a small closet could be cut off from the corner, opening into the large room, as shown by the dotted lines.

Fig. 5.

Cost.—The following estimate in detail at present prices, near this city, will enable any one to determine the cost of building by this plan. Allowance can be made for any difference in cost of materials or labor as required in other localities:

43 yards Excavation, @ 20c. per yard	8.60
6,000 Brick, laid complete, @ $15 ⅌ 1000	90.00
1636 feet Timber, @ 2¼c. per foot	$36.81
viz. 2 Sills, 3x8 in. x29 ft. long. 2 Sills, 3x8 in. x16 ft. long.	
4 Posts, 4x7 in. x21 ft. long. 28 Beams, 3x8 in. x16 ft. long	
2 Ties, 4x6 in. x29 ft. long. 2 Plates, 4x6 in. x 29 ft. long	
2 Ties, 4x6 in. x16 ft. long. 2 Plates, 4x6 in. x 16 ft. long	
32 Rafters, 3x4 inches x12 feet long, @ 20c	6.40
200 Wall Strips, 2x4 inches x13 feet long, @ 16c	32.00
162 Novelty Siding Boards, 9½ inches, @ 35c	56.70
28 Rabbeted Siding, 10 inches, @ 35c	9.80
97 Flooring Spruce, 9½ inches, @35c	33.95
123 Shingling Lath, 1¼x2 inches, @ 6c	7.38
22 bunches Shingles, 18 inches, @ $2.25	49.50
14 Windows with Blinds, two stories, 9 @$8; 5 @ $3	87.00
2 Stairs, $25; 11 Doors and Trimmings, $44	69.00
1 Stoop Materials	10.00
14 rough Spruce Plank, 1½x10 inches, @ 30c	4.20
100 feet Cornice Materials	20.00
Carpenter's Labor, (not included above)	150.00
350 yards Plastering, 3 coats, @ 35c	122.50
Cartage, average one mile	16.00
Painting, two coats	50.00
Extras, for Tin, Nails, etc	40.16
Total Cost in above style	$900.00

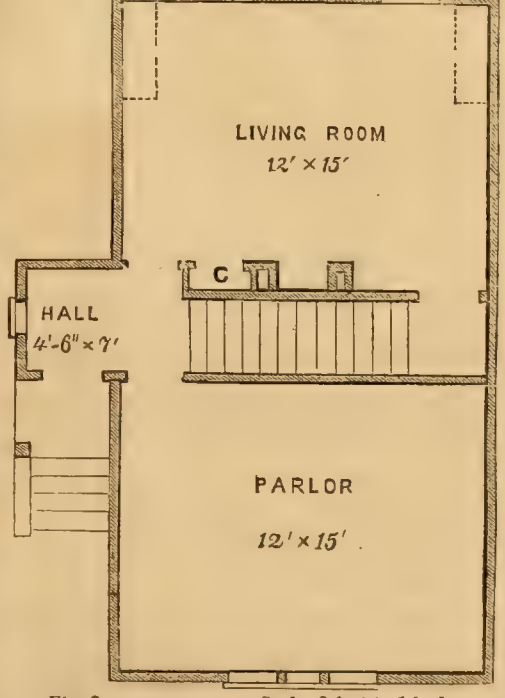


Fig. 3.—FIRST STORY.—Scale, 8 feet to 1 inch.

By omission of Blinds, and in other ways, the cost can be reduced $100 or more, in many localities.

Feeding Animals Profitably.

Non-scientific readers will probably find some difficulty in fully understanding the articles by Prof. Atwater, but they are of the highest importance to every practical man who has a single animal to feed,

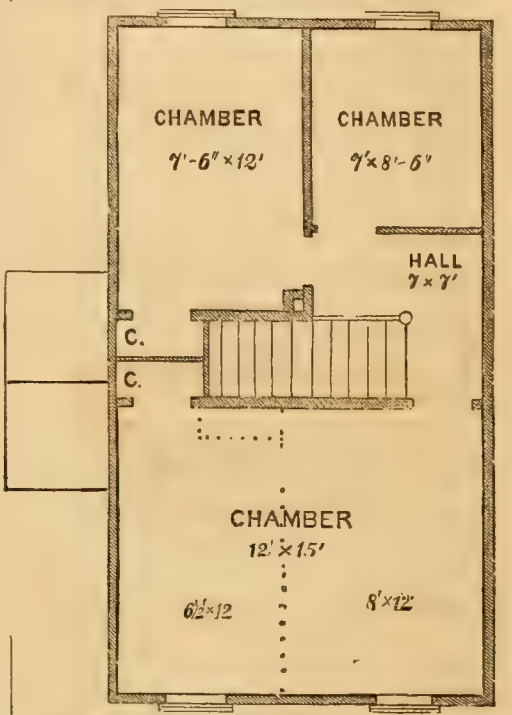


Fig. 4.—SECOND STORY.—Scale, 8 feet to 1 inch.

and however hard the task, we advise every such owner to go over and over these articles, beginning with No. 1 in January, until he fully comprehends them, for it will amply pay in the end to do this. Let us state briefly the drift of No. IV in another column—with the previous chapter, and one or two to come. Certain articles used in feeding contain elements that are digestible in part, and in part not digestible. The digestible portions form flesh, fat, heat, etc., while the indigestible portions go out as excrements, or manure. But the undigested parts of the organic elements in the fodder contain nutriment which will be useful if they can be digested. Now the investigations of science, with the experiments made at the Experiment Stations, *prove beyond doubt that it is possible so to combine foddering materials that a great deal of what ordinarily goes into manure may be digested and turned into flesh, etc.* For example, straw does not differ greatly in actual composition from hay, yet it is far less nutritious, as ordinarily fed, because a much smaller part of it is digested. Yet the Experimental Stations are showing that a small addition of certain other materials will enable the animal to digest and turn to profitable account a much larger proportion of the straw, and by so much increase the feeder's *real profits.* More profit from the same labor and expense is just what we are all looking after, and we have no hesitancy in asserting that in this direction, as well as in many others, science is rapidly coming to aid farmers very greatly. If the aid of science helps to saving only one dollar on each animal during a year, would it not pay to study the principles of feeding? A recent estimate makes the number of cattle, horses, sheep, and swine in New England alone, **3,524,100,** (cows, 705,400; oxen, etc., 690,400; horses, 413,700; sheep, 1,425,700; swine, 288,900). A saving of $1 per head a year in feeding will make over three and a half million dollars! And this is going to be accomplished ere long, and much more also, by the aid of science. The German farmers are doing it now, through the knowledge obtained at their Experiment Stations.

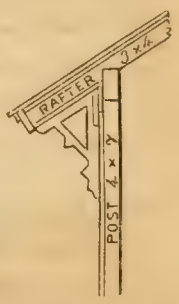


Fig. 6.

Science Applied to Farming.—IV.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

How Science is Saving Money and Increasing the Profits of Farming—Further About Feeding Animals.

In making boots and shoes, the shoemaker takes cowhide, kip, calf-skin, and sole-leather, and cuts them up into fronts, backs, soles and linings. Some of the leather may be too poor to use, and the skillful workman so considers his materials and lays on his patterns as best to economize what is good, and to leave the least possible quantity as *waste*. In keeping his stock the farmer takes hay, straw, grain, roots, and oil-cake, and mixes and deals them out that they may be made over in the body of the animal into bone, muscle, fat and milk, and be consumed in supplying heat to keep the body warm, and the muscular force or strength needed for work. A portion of the food is digestible, nutritious, and useful for these purposes. A part of the food is not nutritious, because the animal can not digest it. This is voided as excrement, and is useful only as manure. The skillful and economical farmer should consider how much of the fodder is digestible, and so portion it out that the best use shall be made of this nutritious part. For unless care is paid to these points, much of the valuable material is wasted. Let us inquire then:

How much of the ingredients of different foods will cattle and other stock *digest* when rightly fed?

During the last fifteen years many hundreds of feeding trials have been made to test these questions. Here is an illustration. In the stables of the experiment station at Weende in Germany, two full grown oxen were fed during one period, of about two weeks, with good ordinary hay; during another period with oat-straw mixed with crushed beans; during another with clover, and so on. The fodder in each case was carefully measured and analyzed, so that the amount of organic substance,* and the albuminoids, carbo-hydrates, etc., which it contained, were accurately known. Of these a part was digested and the rest passed off as excrement. The latter was carefully collected and also analyzed, and the amount of organic substance, albuminoids, carbo-hydrates, etc., it contained, was likewise learned. This being done, the chemists had only to subtract the ingredients of the excrement, from those of the food eaten, to find what was digested.

Below are results of experiments during two of the periods. In one, the ox consumed daily 16.$^{9}/_{10}$ pounds of ordinary hay, and in the other, 17.$^{87}/_{100}$ lbs. of oat-straw, and 1.$^{82}/_{100}$ lbs. of bean-meal.

Table 5.

There was contained in	Total Organic Substance.	The Organic Substance consists of: Albuminoids.	Crude Fiber.	Other Carbo-hydrates and Fat.
	lbs.	lbs.	lbs.	lbs.
(a)—16.9 pounds Meadow Hay...	14.27	2.12	3.80	6.48
In Excrement from same..	6.33	.77	1.63	2.06
There was, then, digested.....	7.94	1.35	2.17	4.42
(b)—17.87 pounds Oat Straw.....	14.25	1.12	6.41	6.74
In Excrement from same..	7.15	.54	2.76	3.86
There was, then, digested.....	7.10	.58	3.64	2.88

The oxen digested, then, from the 16.$^{9}/_{10}$ lbs. of hay about 7.$^{9}/_{10}$ lbs., and from the 17.$^{9}/_{10}$ lbs. of straw about 7.$^{1}/_{10}$ lbs. But let us not fail to notice that the material digested from the straw contained less than half as much of the nitrogenous ingredients, or albuminoids, as that from the hay.—Not far from seventy such experiments as these have been performed at Weende with oxen, besides a number with sheep. And in the other European Stations hundreds of feeding trials have been made with oxen, cows, sheep, goats, horses, and swine, to test the digestibility of hay, straw, green fodder, roots and other kinds of food. We give some of the results in the following table (6), which is selected from a larger one by Wolff. The figures represent general averages. The first column shows the number of pounds of organic substance in 100 lbs. of the food, the rest being water and mineral matters. The third column gives the number of pounds of organic substance which are actually digestible. This digestible material is composed of albuminoids, carbo-hydrates and fats, the amounts of which are given in the fourth, fifth, and sixth columns. In these figures are condensed the results of years of careful and costly labor of many men. Let us study them attentively, for the facts they express lie at the basis of economical foddering.

* For explanations of these terms see: Science made Easy, and the third article of this series in March *Agriculturist*.

Table 6.

Kinds of Fodder. 100 Pounds Contain.	Total Organic Substance.	Indigestible Organic Substance.	Digestible Organic Substance.	The digestible organic substance consists of: Albuminoids.	Carbo-hydrates.	Fats.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
(a)—Hay.						
Meadow Hay, average quality....	79.5	32.1	47.4	5.4	41.1	.9
Timothy, cut at first bloom.....	81.2	30.6	50.6	5.8	43.4	1.4
Red Clover, average quality.....	78.7	32.4	46.3	7.	38.1	1.2
(b)—Straw, Chaff, etc.						
Winter Wheat.....	81.1	48.	33.1	0.8	31.9	.4
Winter Rye....	81.6	47.7	33.9	0.7	32.8	.4
Summer Barley.....	81.6	42.9	38.7	1.4	36.9	.4
Oat.....	81.7	42.4	39.3	1.8	37.4	.6
Corn Stalks.....	80.8	42.4	38.4	1.1	37.0	.3
Corn Cobs.....	83.2	40.5	42.7	0.6	41.7	.4
Wheat Chaff.....	73.7	39.1	34.6	1.4	32.8	.4
(c)—Green Fodder.						
Grass, just before blossom.....	22.9	7.5	15.4	2.0	13.0	.4
Pasture Grass.....	18.0	5.3	12.7	2.4	9.9	.4
Rye.....	22.4	9.1	13.3	1.9	11.0	.4
Fodder Corn.....	16.7	5.8	10.9	0.8	9.9	.2
Red Clover, before blossom.....	15.5	5.3	10.2	2.3	7.4	.5
Red Clover in full blossom.....	20.3	8.4	11.9	1.8	9.6	.5
(d)—Roots and Tubers.						
Potatoes.....	24.1	1.1	23.0	2.1	20.6	.3
Sugar Beets.....	17.8	1.3	16.5	1.0	15.4	.1
Turnips.....	7.3	.8	6.5	1.1	5.3	.1
(e)—Grains and Seeds.						
Wheat.....	83.9	7.9	76.	11.7	63.1	1.2
Rye.....	83.9	8.4	75.5	9.9	64.0	1.6
Barley.....	83.5	6.3	67.2	8.0	57.5	1.7
Oats.....	83.	27.5	55.5	8.9	41.8	4.7
Indian Corn.....	84.1	13.1	71.0	8.4	57.8	4.8
Peas.....	84.3	10.7	73.6	22.0	49.9	1.7
Field Beans.....	82.4	14.4	68.0	23.0	43.6	1.4
(f)—Refuse Products.						
Barley Slump (Distillery).....	9.7	2.1	7.6	1.8	5.4	0.4
Brewers' Grains.....	22.2	8.4	13.8	3.9	9.5	0.4
Malt Sprouts.....	85.2	27.1	58.1	18.4	38.0	1.7
Wheat Bran.....	81.5	29.6	51.9	10.9	37.6	3.4
Linseed Cake.....	80.6	19.9	60.7	23.8	29.0	8.9
Cotton-seed Cake (decorticated).	82.2	26.5	55.7	28.8	17.0	9.9

Now let us compare the first and second and third columns of figures. 100 lbs. of average meadow hay (English grasses) contains, besides water and mineral matters, 79¼ pounds of organic substance, of which an ox, or a cow, or a sheep, will digest about 47¼ pounds, or little over one-half. 100 pounds of straw contain a little over 81 pounds organic matter, of which less than half is digestible. The digestibility of green clover in full blossom is about the same as that of the clover hay. On the other hand, the *digestible* portion of roots, grains, and seeds, makes up from $^{3}/_{4}$ to $^{19}/_{20}$ of the whole organic substance.

Notice again, by comparing the fifth column with the sixth and seventh, what a difference there is in the amounts of the nitrogenous ingredients, the albuminoids, as compared with the non-nitrogenous ingredients, the carbo-hydrates and fats, in the digestible portion of these foods. In straw, potatoes, beets and turnips, there is relatively little; while clover, peas and oil-cake contain a great deal of digestible albuminoids. *This is a very important matter.* Unless the food contains plenty of nitrogen, that is to say of albuminoids, cattle do not digest it completely. The oxen in the experiment at Weende digested so much of the straw only when it was mixed with bean-meal rich in albuminoids.

There are two great sources of loss in our common systems of feeding. One is that we often fail to have enough albuminoids in the food to secure the most complete digestion. Another is that forage crops are not cut when young and easily digested, but are allowed to stand until they are nearly ripe, and much of their material has become indigestible, and of course nearly useless as *nourishing* food.

In another article we will explain these points more fully, and will perhaps describe experiments, which throw more light upon such subjects as mixing food, the proper time for cutting grass and clover, and the effect of cooking and steaming fodder. Meanwhile let the reader study attentively the tables and explanations above, and keep them where he can easily refer to them hereafter.

Congressional Imposition—or Worse.

Just at the close of the late session of Congress, a majority of the members of both houses did an act of ineffable *meanness* to characterize it in the mildest terms. They passed an act to send *free* through the mails unnumbered tons of their own speeches printed at the peoples' expense, and of that mixed effusion of sense and nonsense, yclept the "Reports of the Agricultural Department," and of seeds, etc., *such* as the so-called Agricultural Department sends forth for its own stultification—though intended for its glorification. **And then,** without a word of forewarning, *doubled the postage* on all seeds, plants, cuttings, etc., that anybody else should send through the mails—also on all books and agricultural and other newspapers except those paid for a year in advance. See how it works: Dealers everywhere in seeds, plants, etc., had just sent out their Spring catalogues all over the country, with prices fixed for seeds, plants, etc., to be sent postpaid, based on the recent laws. Congress steps in and in an hour doubles the cost of this whole business, taking away a large part of the legitimate profits from the dealers, and increasing the cost of the articles to the people hereafter. A bulky document of self-glorifying speeches weighing 2, 3, 4, or 5 *pounds* or more, must be carried anywhere *free* to willing or unwilling recipients, but if one of our readers wishes to send to a friend a copy of this journal, weighing only ½ lb. or 4 ounces, he must pay 4 cents for it, while heretofore he has had to pay only 2 cents, and so of all other reading matter. A thousand publishers have offered their works to the public delivered free by the mails at low rates. These selfish Congressmen, in a claptrap way, impose an additional and outrageous tax upon every such book, without a word of notice in advance, to allow dealers to prepare for it. These precious Congressmen knew how mean a thing they were doing, and were careful not to record their names, in voting on this matter. If we can get their names in any way we shall put them in a line of the blackest type.

Ogden Farm Papers.—No. 62.

By George E. Waring, Jr.,

Mr. N. R. Jones, of Humboldt, Iowa, writes: "I have a cow, which dropped a heifer calf, January 20th, (her fifth calf in forty-five months, all at single births). Last week, from seven days' milk, we made 10 lbs. of butter, as yellow as gold, notwithstanding the excessive cold weather—mercury at sunrise averaging 9° below zero, for the past seven weeks. Her feed is now, and has been since her calf was four days old, six quarts of bran and shorts in the morning, all the wild hay she will eat, water once per day, and twelve ears of corn, the last thing at night, just to keep her warm. She is in good, thriving condition.

Mr. M. Y. Tilden, of New Lebanon, N. Y., sends me a report of the production of 22 head of Jersey cattle, for the year 1874. Seven of these animals are 2 and 3 years old, and one is farrow. The herd averaged 247 days in milk, during which time they gave an average of 4,462 pounds, or 2,075 quarts of milk. On the 20th of November, he skimmed 131¼ lbs. of milk, yielding 21¼ lbs. of cream, which made 11¼ lbs. of butter; so that 11.96, or 5.56 qts. of milk, make 1 lb. of butter. This was probably a very favorable time of year for making the experiment, and there may have been some shrinkage of the milk from evaporation, from the time of straining to the time of skimming. It would probably be fair to take 8 qts. of milk as the average required throughout the year for 1 lb. of butter, and, indeed, Mr. Tilden wrote me several times during the summer, that even at the hight of the milking, only about this amount was required. On the basis of 8 quarts, the whole herd of 22, old and young, farrow and fresh, averaged, for the year, 258¾ lbs. of butter. This result is not only very creditable to the Jersey breed, but equally

so to a person with whom farming is only a secondary occupation.

Here is another letter, of a sort to set one thinking. A young man in New York writes: "I have, and always have had, a strong desire to be a farmer, but not having had a practical experience, can not myself judge what is best for me to do. I am engaged here as clerk, am healthy but not strong, age twenty-five, brought up here and in my present position, and have never done any hard physical labor. Would you think that under these circumstances I could succeed? Please advise what *you* would do in my case. What is a farm in complete working order worth in the New England States; and what is the average return on amount invested? Which is the best place to go to, the New England States, or the West?"

Twenty years ago I should have gone to see this young man; I should have taken him by the hand, and should have advised him, without hesitation, to give up his stupid and uninteresting life of a clerk, and "to go out into the free fields and be a man." I am twenty years older now than I was then, and I decline to take any such responsibility. On general principles, I should say that a man who has grown into a good position as a clerk, at the time he is twenty-five years old; who, though healthy, is not strong; and who has not done any hard physical labor in all his life, should be extremely cautious how he exchanges his situation for one where strength and experience, and the ability to labor with the hands are most important. But when it comes to his next proposition, I have no hesitation, for if *I* were twenty-five years of age, and a clerk in a store in New York, I should leave and strike for the country as soon as I could draw my weeks' salary. I might regret it, and probably I often should, for there come dull times, and dead chickens, and aborting cows, to the best of us; but, with all my knowledge of these things, I do not hesitate to say that given twenty-five years of age and an opportunity, I should go to farming, instanter, and take my chances.

While I am prepared to give this young man no absolute advice, I will advise him with an "if" to his heart's content. If he is "bound to be a farmer," (and on this point he must make up his own mind), there is but one prudent course for him to pursue; that is, to scrape together all the money he can, and put it in a good saving's bank, and say good-by to it for at least two years, and then start for a good farming region at the East, (I should go to Delaware or Chester county, Pa.), offering his services for board alone if necessary, to the best farmer he can get to take them, and there stick, without regard to discomfort and annoyance, until he has worked his way into that farmer's respect and confidence, and has learned all he can teach him, and all beside that an active and intelligent and educated mind can gather from observation. He should, at any sacrifice, keep accounts and memoranda of everything going on on the farm, until he has familiarized himself with all the details of his business. Such conduct, and such a way of taking hold of his work, is sure to gain the confidence and interest of his employer, and the chances are a hundred to one that he will find his life and associations cheerful and happy.

After two years of such work and preparation, he will be ready to buy or to hire a farm, and to set up on his own account, without great risk of losing money. If he went at it without a preparation, it would not be a risk at all, it would be a certainty. Farming can not be learned except by experience; neither can strength be acquired except by exercise; nor can the habit of hard labor be drummed into the human frame, save by a process that takes time; and so long as one can secure food and clothing and shelter, if he gets these valuable requisitions, he gets capitally well paid for two years of hard and persistent work. It would be safe to say that any young man of intelligence, who will go through such a course as is here laid down, is morally certain to succeed when he finally takes up farming on his own account; but without this preparation, and this trial, it would be extremely unpromising for any one to adopt the profession with the hope of reaping profit from it. Concerning the last three questions asked, it is not safe to say much. It now looks as though the thickly settled regions at the East were as promising a field as any other for intelligent farming.

The question of the deep setting of milk for butter, is awakening a good deal of interest. My old criticiser, Mr. Eastburn Reeder, remains unconvinced, and is having a lively discussion on the subject with Mr. Hardin, of Louisville.

I get frequent letters on the subject, which throw further light tending to the solution of the question. J. H. Beattie, Argyle, N. Y., says: "Last spring I made several deep cans, 8 inches by 20 inches, in which I strained my milk, and set it in cold water until the animal heat was out. Twenty-four hours after straining, I skimmed it; let it stand twenty-four hours, and skimmed it again. In both skimmings I have taken off five inches of cream, at the best. The average was four inches. I am highly pleased with the system; it enables me to make much more butter, and a great deal better. Hot weather has no effect on the can. How much salt should be used to the pound of butter?"—For immediate use, ¼ oz. to ½ oz. per lb.; for packing, ½ oz. to 1 oz. per lb.—with well-worked butter the smaller quantities are preferable.

F. Folger, Fort Miller, N. Y., says: "I have adopted your plan of setting milk in deep cans the past season, and, from five cows, am sure I have made 100 pounds more butter, than I could have made by the use of the common pans, under the most favorable circumstances."

H. B. Gurler, De Kalb, Ill., made the following experiments, with cans 8 inches by 19 inches, and with common shallow pans: "May 16th, it took of milk set in deep cans, 30 lbs. for 1 lb. of butter, set in shallow pans, 29 5/16 lbs. for 1 lb. of butter, 2¼ per cent more milk being required in the cans than in the pans. May 26th, 1873, it took 24.8 lbs. of milk in the cans, and 24 lbs. in pans to make 1 lb. of butter,—a difference of 3⅓ per cent. in favor of shallow pans. The cans were set in a vat of water, kept at a temperature of 60°, and the temperature of the cellar was kept at 60° for the shallow pans. At that season of the year there is little difficulty in having the temperature of the cellar right, but later in the season, it is much more expensive to control the temperature of a cellar, than of a vat of water. I aim to keep the temperature as high as I can, and have the milk keep sweet the necessary length of time. I have used the cans two years, and am pleased with them. *So are the women folks.* The labor of caring for the milk and utensils up to churning, is not more than one-half as much as it was by the old system. It also requires much less room than the pan system. Can you tell me the amount of nutriment in 100 pounds of corn, 100 lbs. of oat-meal, and 100 lbs. of bran? What I want is, the comparative value for feeding purposes, mainly for cows."—Corn and oats are of about equal value, but a mixture of the two would be better than either one alone. Wheat bran is of about half the value of these grains, but is better than either of them in its effect on the manure. It is estimated that the manure from a ton of each kind of food is: corn $6.65, oats $7.70, wheat bran $14.59. The correctness of these figures would depend on locality and prices, but the proportions between them would remain the same.

Mr. H. Temple, of Marshalton, Chester Co., Pa., writes: "As you ask for experiments with deep cans for setting milk, I propose giving you mine. Some time back I made an experiment with the following results. The cans were 8 inches in diameter, the pans were the common kind and size. After mixing the milk, I put 152 pounds in four cans, setting it 12, 13, 14, and 15 inches deep in them; put the same amount in pans, from 4 to 4½ inches deep, and placed them all in spring water of 52°; but I think the cans did not have as much cold water pass around them as the pans, as they had to be put in a box in which cream cans were kept, and of course the milk did not cool so quick. After standing about 36 hours, the cream was taken off and churned. Butter from cans 5 lbs. ¼ oz., from pans 5 lbs. 3½ oz. Not as much difference as the Solebury Farmers' Club made in their experiment. I weighed and measured it myself, and know it to be correct. The cream in the cans was about 2 inches deep by measure. What is your opinion about it, did I lose some of the cream from the cans by it not being cooled as quickly as it was in the pans, or from some other cause?—*We thought the butter was better made from the cans, as there was less surface exposed to the atmosphere.*"—This is a very different showing from that made by the Solebury Club, and is more nearly in accordance with my own ideas. I have never claimed that there was any material difference in quantity in favor of the deep setting, but have claimed a decided superiority in quality. In this case the 3½ oz. lost by the use of the deep cans, was doubtless much more than compensated for by the superior quality, though, I think, of course, the difference would have been much greater if the experiment had been with cans in water and pans in the open air.

Edward Farnham, Providence, R. I., has used the deep can system during the past year, and has had neither sour milk in August nor frozen milk in January. He concludes that he saves three-quarters of the labor of taking care of the milk, and has a marked improvement in the quality of his butter. He has sometimes doubted if he has got so much butter by this system, would have tried comparative experiments, but dreaded to return to the extra trouble of the pans. Did make an experiment the last week in February, when he got 7½ lbs. of butter from 162½ lbs. of milk in cans, and 5¼ lbs. of butter from 120½ lbs. of milk in pans, or from the cans, 1 of butter from 21⅔ of milk, and from pans, 1 of butter from 23 of milk. His positive conclusions are, that, though his new dairy was expensive, it saved much trouble and many steps, and decidedly improved the quality of the product.

In Mr. Hardin's last article on the deep setting of milk, he says that he has experimented on all intermediate temperatures from 10° to 85°, and has come to the conclusion that 49° Fahr. is the proper temperature for the proper rising of the cream. I have never been able to experiment at that temperature, not having been so situated that I could use ice under my own constant supervision, but the Swedish experiments which first called my attention to the subject of deep cans, were made with milk set at a much lower temperature than this, often below 40°, and experiments showed that as much butter was made in that way as in any other.

A correspondent in New York State comments on my statement in the February number, that the sickness and death caused by a neglect of proper drainage, is to be considered as coming not from the act of God, but from the act of man; and he goes on to say that God has established certain unchangeable laws which cannot be violated with impunity. This was precisely my own meaning, and I thought I had suggested it with sufficient clearness. The only point for which I contend is, that it is in the last degree stupid, when we lose a friend by typhoid fever, to accept the loss with resignation, as an act of special Providence committed for some inscrutable purpose. It is, of course, a result of our violation of an established law, but the purpose is by no means inscrutable, and, as a death could have been prevented by a proper regard for our own responsibilities, and a proper attention to our own duties, it seems to me entirely proper to say that it was caused, so far as anything in the world can be caused, by the act of man. The law being established, we disregard it at our own risk, and must accept the penalty as a punishment for our own fault, coming in a way by no means inscrutable, indeed only a miracle could prevent it.

J. G. E., Camden, N. J., has a liquid manure vat twelve feet square and five feet deep, dug in stiff clay and lined with boards. In this are accumulated the liquid manure of his stables, and all of the liquid drainage from his house. This liquid he pumps up and sprinkles on his grass. At times the

vat overflows into the hog-yard, but does no harm. He asks whether the practice is advantageous, and whether, as the vat is covered with a floor and with earth, there is danger of its causing typhoid fever; also, can anything further be done to complete the arrangement with a view to profit or to health?—There can be no question as to the value of the manure produced, nor of the profit of its application by a convenient sprinkling cart. This custom is almost universal throughout Holland and Belgium, and is considered the very keystone of profitable farming; in Japan, where the productiveness of the soil is very remarkable, all, or nearly all of the manure that is used, is reduced to a liquid form, and applied to growing crops. On the score of profit, I can suggest no improvement, except some arrangement to increase the quantity of the liquid. With a good well, conveniently situated, it would pay to pump a great deal more water into the vat, diluting the liquid and increasing its quantity; for one advantage of the process comes from the manurial constituents of the contents of the vat, and another, and very important one, from the irrigation of the crops,—the benefit from this latter being so great that it would pay, if it could be done at a moderate cost, to sprinkle the ground with pure rain water only. The danger of malaria may be considerable, unless proper precautions are taken. The vat should be ventilated, if only by an open hole in its top, and this hole should be large enough to admit light; for it is supposed that the production of the peculiar poison which occasions typhoid is the most active when the decomposition of organic matters is carried on in the absence of air and daylight. The ventilation of the vat being secured, the pipe near the house should be thoroughly trapped, to prevent gases formed within the pipe itself from gaining access. As good a trap as any for such a situation is the ordinary grease-box, used for sinks, and this will have the added advantage of keeping out of the pipe much matter that would by its accumulation obstruct its flow.

Recent experiments made in Germany, by carefully washing the stubble and roots of plants so as to free them from earth, and thus determine their value as manure for the subsequent crop, have given important results, as shown by these tables:

	No. of lbs. of stubble & roots (dry) per acre to a depth of 10½ inches.	*No. of lbs of Nitrogen per acre.*	*No. of lbs. of ash, free from carbonic acid, per acre.*
Lucerne (4 years old)	9,678.1	136.4	1,201.6
Red Clover (1 year old)	8,921.6	191.6	1,049.9
Esparsette (3 years old)	5,930.9	123.2	1,023.4
Rye	5,264.6	65.3	1,747.8
Swedish Clover	5,004.3	102.3	974.6
Rape	4,477.	56.5	622.3
Oats	3,331.9	26.6	1,444.7
Lupine	3,520.9	62.2	550.
Wheat	3,476.	28.5	1,089.8
Peas	3,222.5	55.6	670.7
Serradella	3,120.1	64.8	545.6
Buckwheat	2,195.6	47.9	465.5
Barley	1,991.4	22.8	391.1

CONTENTS OF THE ASHES, IN POUNDS, PER ACRE.

	Lime.	*Magnesia.*	*Potash.*	*Soda.*	*Sulphuric Acid.*	*Phosphoric Acid.*
Lucerne	197.7	24.2	36.7	26.4	18.7	38.5
Red Clover	262.9	48.4	58.3	20.0	26.1	71.8
Esparsette	132.8	28.7	42.6	13.8	20.6	29.7
Rye	73.2	11.3	31.2	43.3	11.8	24.4
Swedish Clover	136.1	17.6	25.9	5.7	13.2	24.2
Rape	163.9	12.9	34.7	20.9	30.8	31.9
Oats	85.5	11.2	24.8	18.	8.8	29.
Lupine	80.5	11.2	16.5	3.5	7.	13.8
Wheat	76.7	10.1	28.4	11.	7.4	11.8
Peas	71.7	11.	11.2	7.	9.4	11.3
Serradella	79.8	13.4	8.8	4.8	9.	18.4
Buckwheat	80.	7.2	8.8	4.2	6.6	11.
Barley	42.2	5.5	9.5	3.5	5.5	11.2

In considering the effect of any crop on the subsequent crop to be grown on the same field, the figures given in this table will show not the positive value, for this must constantly change, but probably the relative value, and also the degree to which the most necessary constituents of the second crop are provided by a preparatory crop of one kind or another. The leguminous plants stand at the head of the list, and of these, as experience shows, red clover takes the first rank in all three of the important items of nitrogen, potash, and phosphoric acid.

Voices from the Bee Hive.

INTERPRETED BY M. QUINBY, ST. JOHNSVILLE, N. Y.

If the weather continues as cold through March, as it has been in February, very many of us who live in exposed hives, will suffer greatly. No warm sunny days have invigorated our systems, and many of us—kept in hives out of doors—have already failed. When in comfortable quarters, in latitude anywhere from 40° to 45°, don't be in too much of a hurry to get us out. We mean by comfortable quarters, a room or cellar where the temperature has not been below 40°, nor more than 50°. Don't be anxious to get us out the first warm day this month, and then let us stand through the cold nights that often follow. If we are quiet, it indicates that we are comfortable, and are willing to remain so a month longer than is generally allowed us. If any of us are so cold that our excrement is voided in a liquid state, soiling everything near us, perhaps it would be best to let us take a flight in the open air, on the first warm day. If the day should prove very fair, and there are many of us, our exercise would prove invigorating. Those of us who had been confined near the center of the hive, would scatter to the out-side combs, and bring to the cluster very much of the honey. The mother, or queen, as you call her, as the weather becomes warm, and the honey is brought near her, thinks it time to commence her labors. Eggs will be deposited near the center. The temperature necessary to hatch these eggs, is probably not below 70° to 90°. Now if the temperature of the open air is down to freezing, we must, to get the proper temperature for the eggs, consume more honey, and consequently exercise more to generate heat, and then cluster very closely to retain it. When we are too cold, honey is consumed to very little purpose, as but little brood will be raised, and every day, if possible, a few of us leave, and many are lost, more in fact than the brood that is maturing will replace. The best thing to do at such a time, is to return us to winter quarters until the next warm day, when another flight will be advisable. This will be needed much more than if we had been kept warm and *quiet* since November. Let those which are still quiet remain until flowers appear in abundance. In some localities we have been thus kept to advantage, until May. A great many of us dwindled, and were lost in April, last year, many more were very much reduced. If we have been kept in the open air all winter, and still survive, it would be well to put the hive into comfortable quarters, until the chilly boisterous winds of March and April are passed—except, perhaps, a few of the finest days, when we might be returned to the stand. Let us occupy the old stand every time we are put out. If we fail to gather every particle of pollen that is produced, the failure will be of less consequence than the loss of bees in trying to collect it. A strong force to gather it, when pollen is abundant, and the weather warm, is very satisfactory.

Report of Producers. BY M. Q.

Our North Eastern Association met according to appointment, on February 3d and 4th, at Utica, N. Y. The president in opening the discussion, alluded to the amount of honey brought to the New York market the past season. An inquiry among the dealers in the city, resulted in the estimate that the surrounding country and states, had furnished 200,000 pounds of honey, and the same quantity was received in addition from California. The report of what each member furnished, is not at hand, but I will mention what a few contributed. J. E. Hetherington, Cherry Valley, N. Y., himself and assistants sent to market 57,000 lbs., collected by about 600 hives. P. H. Ellwood, Starkville, Herkimer Co., N. Y., had the care of 175 stocks, and gathered a surplus of 17,050 lbs. L. C. Root, Mohawk, Herkimer Co., N. Y., from 102 stocks, had 10,600 lbs. A. H. Root, Palmyra, N. Y., and a near neighbor of his, from about 40 stocks, averaged a little over 100 pounds from each stock. The amount reported by very many others, will be published in the report of the session. I mention these, because they kept rather more than the usual number of stocks, and used the hive described in the *Agriculturist*, in 1873. When the result from individual hives has been given, the question has been asked why I did not give the average from a whole apiary. Here it is. I received a report from Adam Grimm, a veteran bee-keeper in Wisconsin, who formerly kept bees in Germany. He started with over 700 stocks, and reports 25.000 pounds, sent to New York market. Has now a greater number of stocks than any other man in America....One other point was referred to in the opening, that I wish to mention: there are dealers in honey, who purchase a small quantity of the pure article, and adulterate this with something of less value, and sell it to the consumers as honey, thereby lessening the value of the pure article. This was discussed at the American Convention, but nothing was done further than to pass resolutions. At our Convention, after approving of their resolutions, a committee was appointed to ask our Legislature—in the name of the association—to protect us as they do farmers, dairymen, merchants, and others. We ask that every honey producer who offers honey in market, should label every package of honey with his own name, and what it contains to the best of his knowledge, and if any dealer or producer, is detected in adulterating it, and not labeling in accordance with the law, let him be liable to the penalty of obtaining money under false pretenses. We ask every honest bee keeper to help in this matter. The foregoing was intended for the March number, but accidentally left out.

Beekeeping in Spain.

[Mr. H. Gil, one of our subscribers in Spain, in a recent letter asks, among other things, various questions about bees; these were referred to Mr. Quinby, and as his replies will be interesting to beekeepers elsewhere, we give them here. The nature of the questions will be inferred from the answers.—ED.]

In answer to some of the questions of Mr. H. Gil, I would say that I still like the hive described in the *Agriculturist* of 1873, better than the one in my book, 1865, for the following reasons. The bees can be protected from the moth-worm better. The clamps at the corners will prevent warping, even better than nails. It is impossible to make a hive with joints so close as not to leave a crack sufficient for a worm to creep in, as soon as the bees generate moisture to warp the boards, from the inside; the 16th of an inch will admit them, and they will gnaw out a place large enough for a cocoon. When a worm is so completely enclosed in a hive *nailed* together, it is almost impossible to remove it. It remains until it becomes a perfect moth. Suppose the moth-worm has made lodgement in a crevice of the new hive. In one minute every joint can be taken apart, and every cocoon be scraped off, and worms destroyed—the frames standing on the bottom undisturbed. The outside can be almost as quickly put together again. We think more of preventing a permanent lodgement of the moth than of getting rid of it afterwards. A hive *full* of bees is never much affected by the worms. As long as a swarm of bees is strong enough to do *anything*, this hive—at least the combs—can be kept full of bees. As the frames stand on the bottom board, and each one holds itself up, if the bees become reduced so as not to cover all the combs, those outside can be removed until they do. Then if the panels on each side are set up to them, we have a hive full of bees. When they increase enough to cover more combs, we have only to put in some of the combs that were taken out, until we get the number needed, or if it is desired, boxes can be put on instead. I have found it much more trouble to diminish the size of the hives with suspended frames, and make them bee-tight, than with this one. The condition of the hive with regard to the number of bees should be watched diligently. When they become weak from overswarming or other cause, the moth will enter—ascertain what is the matter without delay. The outside of this hive is removed in a moment. The outside of the outer comb is examined without disturbing a bee—no boxes ought to be on when bees are scarce. Now slip the comb sideways, and unhook it and examine the other side. Hook it on a few inches from the first, and take the next one in the same way until all are examined, not a bee will be angered by being squeezed, as they often are by lifting out a suspended comb with an uneven surface between two others. Whenever the true condition is ascertained, the combs can be set back in a few moments. Suppose the worms have gained access to some crevice in the bottom on which the frames stand, it is only necessary to have a clean hive, one that has had every vestige of egg, worm, or moth destroyed by scalding water, and set the combs in that, and then the hive from which they have been removed can be cleansed with boiling water without killing a bee. If necessary to drive the bees from any particular place during the operation, a little smoke will be needed. Worms breed in a lower temperature than bees, and when combs are taken from the hive to save them from the moth, they should be subjected to the fumes of brimstone once or twice to destroy any eggs or larvæ that may be in them; if they are kept perfectly safe from the moth, they may be kept for months. If Mr. Gil will learn how to keep his bees strong at all times; it can be done by exchanging combs filled with brood for empty ones, or other means, he will soon cease to fear destruction by the moth in any hive. Throughout this country the product of this hive has exceeded any other. I think too that the surplus obtained in it would be much superior to that he complains of. For his climate I would not transfer to the straw-hive by any means. The largest bee-keeper in this country has several hundred straw-hives thrown aside, and has transferred to this new one, and finds money in the operation. When the temperature is not severe, the straw-hive is the best one for winter, but this one is readily converted into a substitute, by just tying the frames together and unhooking, and then hooking them on a strip laid on the bottom, so as to bring the frames the other

way across the hive. On one side of this strip have a piece of hoop-iron similar to that on the bottom; let the strip be about 3 inches wide, one inch thick, and a foot long—it need not be fastened to the bottom—it will hold steady enough. Cover the frames, and pack cut-straw, chaff, leaves, or saw-dust, on every side, as well as top, about four inches in thickness, leaving a passage-way for the bees at the bottom. In spring this can be converted into the original hive again in a few moments. No other hive, except one with frames standing on the bottom board, can be thus changed. Do not try to save any empty comb for future use, that contains brood. The brood will die and become putrid soon after being chilled, and injure the bees that it is given to. But any clean comb is valuable, and is worth much more than wax. Cut off all drone cells, and join several pieces to make one frame full if necessary. It will be cemented soon, if there are bees to do it, whether the swarm be old or new. The pollen that may be scattered about in the cells of dry comb will do no harm. Perhaps there is more pollen collected in your country than with us. It may be the cause of more being mixed with box honey. If this is usually the case, I would recommend the extractor, when the honey will be obtained pure. Combs and bees can be transferred from any hive—by any one that understands it—to the said hive, where everything—almost—may be controlled. M. QUINBY.

Robert Buist and Eulalia.

When a person misrepresents in print, even though it be a business catalogue, we hold that we have a right to reply in print. Robert Buist, Sr., of Philadelphia, in his catalogue for 1875, by a partial quoting and only half true statement, misrepresents the publishers and editor of this paper in a manner that we consider perfectly unfair and deserving of exposure. We must premise that the editor of the *Agriculturist* was the horticultural editor of Hearth and Home when that paper was published by Orange Judd & Co. Several years ago Mr. Thomas Hogg, with other Japan plants, sent to his brother, James Hogg, now editor of the American Garden, some roots of an ornamental grass which he supposed might be an *Imperata*. When this grass came into flower, Mr. J. Hogg brought us a specimen which was illustrated and described in Hearth and Home for Dec. 9th, 1871. In the article we distinctly stated that it was not an *Imperata*, but that "it agrees well with the brief description of *Eulalia Japonica*," and not having authentic specimens for comparison, we gave it that name with a "?" to show that we were not absolutely positive. Mr. J. Hogg, when he gets good things, is desirous that others shall enjoy them also, and with this, as with other rare Japanese and other plants, gave us a bit of it, knowing that it would be as safe in our garden as his own. In due time our plant increased to dozens, all kept as in trust. After Mr. Thomas Hogg returned from Japan, we asked permission to give a plant of Eulalia to a gentleman in Georgia, which, with characteristic liberality, was accorded. In the spring of 1874, Mr. Thomas Hogg returned to Japan; a day or so before he left, he called and purchased of the publishers a copy of the engraving of the Eulalia which appeared in Hearth and Home, stating that he had placed his stock of the grass in the hands of Robert Buist to be propagated on joint account, and as he was about leaving, wished the engraving, when ready, sent to Buist. He paid for the engraving, and when done it was sent to Buist with a receipted bill upon which were placed the conditions always made when we sell a copy of an engraving, viz: that no copy of it is to be sold by the purchaser. In a few days the engraving came back from Buist with the curt note, "conditions not accepted." When Buist's catalogue for 1874 came out, it had what appeared like a very poor cut of the Striped Japanese Maize, to stand for this grass, which he persisted in calling Imperata. In Buist's catalogue for 1875, he quotes our Hearth and Home article, carefully omitting that portion which says it is not an *Imperata*, etc., and then adds, "With the above came a cut of representation by a New York artist. It struck me as a representation of the striped Japan corn; when I saw the plant in growth I did not repeat it in our second edition." Any fair construction of this language shows that it is an attempt to convey the impression that this striped cut came from us. It quotes Hearth and Home and says, "With the above came, etc.," and the implication is that our cut is a poor one. We have already shown what became of our cut. In his catalogue, Mr. Robert Buist grandly says, "I have no reason to change the name until I see it from classical authority." If Mr. Buist had cared to be correct, he could have consulted some standard works upon grasses, and provided he were able to understand botanical terms, and knew the names of the parts of plants, he could have satisfied himself that this was no more an *Imperata* than it was a bamboo.

Catalogues Received.

The publication of the list of catalogues last month, has reminded many dealers that they had not sent us their price lists, which have been coming in at a rapid rate. Below are given those received up to March 12th. For other lists see January and March. As before, we arrange the names in alphabetical order. It frequently happens that one catalogue embraces two or three kinds of business: thus, nurserymen and seedsmen often deal in flowers, and as we can not give the space to notice the same catalogue under different heads, we place it under that of the leading business, and mention the other branches.

SEEDSMEN.

B. K. BLISS & SONS, 34 Barclay St., N. Y., issue a separate catalogue for their seed potatoes, which contains much interesting matter about potato culture.

D. H. BROWN & SONS, New Brunswick, N. J., have also bedding plants.

T. CADWALLADER & BROS., Newtown, Bucks Co., Pa. Also florist's plants and rustic work.

CROSSMAN BROS., Rochester, N. Y. Very fully illustrated, with colored plate of petunias.

BENJ. A. ELLIOTT & Co., Pittsburgh, Pa. Besides seed catalogue, a separate one of flower stands, ferneries, and other florists goods manufactured for them.

E. C. MEAD, Broad Oak Gardens, Keswick, Va. Also small fruits and vegetable plants.

L. H. MENDENHALL, Richmond, Ind., has also florist's plants.

JAMES H. MORRIS, Chicago, Ill. Successor to D. S. Heffron.

THOS. Y. DE NORMANDIE, Wilmington, Del., general seed and implement catalogue, and rural books.

PLANT SEED COMPANY, St. Louis, Mo., issue their large seed catalogue in German.

REEVES & SIMONSON, No. 38 Cortlandt St., N. Y. Also florist's plants from their greenhouses at Staten Island.

SCHLEGEL, EVERETT & Co., Boston, Mass. Very fully illustrated, with a copious list of specialties.

JAMES VICK, Rochester, N. Y., sends No. 2 of his Floral Guide, which is part catalogue, but mainly filled with interesting and useful horticultural articles.

YOUNG & ELLIOTT, No. 12 Cortlandt St., have a full list of seeds and garden requisites.

NURSERYMEN.

BARNHART, GALLAWAY & Co., West Newton, Pa., with several novelties.

BUSH, SON, & MEISSNER, Bushberg, Mo. Solely grapes, and an immense assortment.

CALKINS & BROOKS, Bricksburg, Ocean Co., N. J. Wholesale list.

JOHN S. COLLINS, Moorestown, Burlington Co., N. J. Small fruits, seed potatoes, and peach trees.

W. L. FERRIS, Jr., & Co., Poughkeepsie, N. Y. Besides a full nursery stock, offer florist's plants and seeds.

FRANK FORD, Ravenna, Ohio. Small fruits, with Hoosac blackberry a specialty.

HENRY L. GAISER, Seymour, Ind., has greenhouse and bedding plants, besides general nursery stock.

GREENBROOK & PATERSON City Nurseries, Paterson, N. J. Exceedingly neat catalogues of collections of plants, with beautifully illustrated business cards.

GRIMES & MEYER, Pittsburg, Pa. These gentlemen carry on the celebrated Knox Fruit Farm.

R. H. HAINES, Malden-on-the-Hudson, N. Y. Small fruits.

WM. F. HEINS, Paterson, N. J., or 161 Broadway, N. Y. Various ornamental and other trees, with French basket willows as a specialty.

H. E. HOOKER & BRO., Rochester, N. Y., send general list, and an illustrated catalogue of specialties.

J. S. HUBBARD, Fredonia, N. Y. Large list of grape vines.

J. & W. K. JUDEFIND, Edesville, Md. General nursery stock, with Amazon raspberry as a specialty.

W. S. LITTLE, Rochester, N. Y., Commercial Nurseries. Ornamental trees, roses, etc.

LONG BROTHERS, Williamsville, N. Y. Besides their florist's establishment at Buffalo, offer fruit and ornamental trees as above.

LOOMIS & BRAINARD, Painsville, Ohio. Also greenhouse plants.

AMOS MILLER, Carlisle, Pa. Small fruits, with several new strawberries raised by himself.

E. MOODY & SONS, Lockport, N. Y. This nursery, established in 1839, has all the novelties, and makes a specialty of standard pear trees.

ROBERT B. PARSONS & Co., Flushing, L. I., N. Y., occupy the grounds of the old firm of Parsons & Co., and offer the same specialties.

S. B. PARSONS & SONS, Flushing, L. I., N. Y., send a price list, supplementary to descriptive catalogue noticed last month.

J. C. PLUMB & SON, Milton, Wis., offer fruit and ornamental trees, especially adapted to the climate of the northwest.

REISIG & HEXAMER, New Castle, Westcheste Co., N. Y. Besides all the new and leading small fruits and potatoes, have collections of varieties of the strawberry and potato, more complete than can be found elsewhere.

E. Y. TEAS & Co., Richmond, Ind. Fruit and ornamental trees, and a special very full catalogue of roses and greenhouse plants.

T. C. THURLOW, Newburyport, Mass. Wholesale list.

B. F. TRANSOU, Humboldt, Tenn., offer stock at wholesale, at reduced rates.

B. M. WATSON, Plymouth, Mass., still carries on the Old Colony Nurseries, and has a seed warehouse.

D. B. WIER, Lacon, Ill. General stock, with several novelties, especially the Birkett pear.

T. G. YEOMANS & SONS, Walworth, Wayne Co., N. Y. A select list of fruit and ornamental stock.

FLORISTS.

Many of the nurserymen, and some of the seedsmen, also deal in flowers, as mentioned above.

JAMES J. BRODIE, Easton, Pa. All the standard varieties, and many novelties.

MILLER & HAYS, Philadelphia, Pa., issue two very handsome catalogues, one of greenhouse and hardy plants, and the other of roses, a very full list, with a colored plate.

JOSEPH T. PHILLIPS, West Grove, Chester Co., Pa., makes plants by mail a specialty.

CHAS. T. STARR, Avondale, Chester Co., Pa. Has also vegetable plants.

SIDNEY WILKINSON, Providence, R. I. Also wholesale trade-list, and seeds.

W. B. WOODRUFF, Westfield, N. J. Also vegetable plants and Robert Tomato.

EUROPEAN CATALOGUES.

WM. BULL, London, S. W. (Eng). A list of seeds equal in extent to the bulb list noticed last month.

ALEGATIERE, Lyons, France, comes out this year with a new set of double Pelargoniums and carnations.

CONRAD TRUMPFF, Blankenburg, Harz, Germany. Catalogue of forest tree seeds.

E. H. KRELAGE & SON, Haarlem, Netherlands, celebrate the 64th year of their establishment, by publishing an American edition of their catalogue, which contains, besides plants, interesting historical notes.

POULTRY, IMPLEMENTS, AND MISCELLANEOUS.

C. W. GUY, Norwood, Mass. Eggs only, from a very large stock.

JAMES E. SISSON, Westerly, R. I., Imperial Pekin Ducks, and Java game fowls.

P. BLANCHARD & SONS, Concord, N. H., account of their excellent churns, and butter manual.

WM. BRAND, Evansville, Ind., sends illustrated circular of his revolving churn.

CHARLES G. BLATCHLY, Philadelphia, Pa. Ice-cream freezers, that we know to be excellent.

PHILIP S. JUSTICE, Philadelphia and New York. Galvanized elastic wire cable, of different styles.

G. B. WEEKS & Co., Syracuse, N. Y., manufacture Chipman's Railroad Pitching Apparatus, for hay, etc.

W. S. BLUNT, 77 Beekman St., N. Y. The People's Pump, of which we have already spoken.

AMES MANUFACTURING COMPANY, Chicopee, Mass., make the Martin's Brick Machine.

CHAMBERS & QUINLAN, Decatur, Ill. "Champion Hog Ringer."

H. B. DURFEE, Decatur, Ill. The Durfee Riding or Sulky Plow.

FOOS & JAYNE, 109 Liberty St., New York, make the Bookwalter Portable Engine.

AM. METALINE COMPANY, 61 Warren St., make a remarkable substance for the bearings of machinery, to avoid friction, and describe it in a pamphlet that is a work of art.

W. & B. DOUGLAS, Middletown, Conn. Pumps of various kinds, and fixtures.

VANDERBILT BROTHERS, 23 Fulton St., N. Y., send a very full implement and seed list.

A Small Poultry House.

"H. M. S.," sends a sketch of a poultry house, (fig. 1), and requests suggestions as to its fitness for his purpose, and the proper inside arrangements. It is intended to be four feet below the surface of the ground. In this case the bottom should be well

drained, at least a foot in depth beneath the wall, and the house must be kept well ventilated, to avoid dampness, which is the most injurious thing

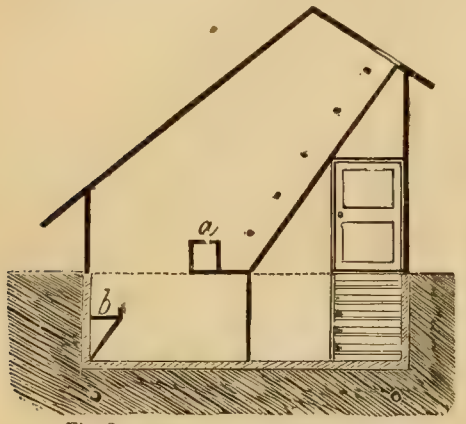


Fig. 2.—SECTION OF POULTRY HOUSE.

possible for fowls. Otherwise the plan sent would be unobjectionable. As to interior arrangement, there should be an entrance as shown at *a*, fig. 2, opening on to a plank extending the whole length of the building, from which the fowls can reach the roosting poles. Beneath the poles there should be a sloping partition, upon which the droppings may collect and slide down to the plank walk already mentioned. From this they should be swept off every day, and carried away. To prevent the droppings from clinging to the partition, it should be well dusted every day with dry plaster, road dust, or sifted coal ashes. Beneath the plank walk let the partition extend to the floor, dividing the house into two apartments. At the front of the house a row of nest boxes, supported by braces, as seen at *b*, should be made. The rear partition may be devoted to hatching and rearing chickens, a door at the further end of it opening into the front apartment. This would make an excellent poultry house for a village lot, being cheap, plain, and including many conveniences under one roof. The sash in front sloping to the South, would keep the house warm during winter, and with proper care to feed the fowls well, and keep the house perfectly clean, eggs might reasonably be expected all the winter. Figure 3 is an illustration of a good nest, which may be kept free from vermin, and being open permits the air to circulate amongst the eggs when a hen is brooding upon it. It is made of wire, or may be woven of willows or splints by any ingenious boy. A round piece of wood is fastened to the front for the hen to alight upon, iron or wire hooks are fastened to it, by which it may be hung upon nails driven in the wall, and a piece of shingle planed smooth, is fastened to the front, upon which the date when the hen commenced to sit, may be written. When a wire nest needs clean-

Fig. 1.—EXTERIOR OF POULTRY HOUSE.

ing, it is laid on the ground in the yard, the straw set on fire, and after that is consumed there will be no vermin left to infest the nest. A basket nest may be drenched with boiling water, and purified.

Field-Markers for Corn, Potatoes, etc.

A correspondent sends us descriptions of markers which may be used for laying out rows or hills for corn, potatoes, beans, or other hoed crops. That shown at figure 1 is made by affixing short runners with sharp beveled sloping ends, to a plank to which a tongue is attached. A different number of runners is affixed to each side of the plank, so that rows of different widths may be marked by turning over the plank and changing the tongue to the other side. The implement shown at figure 2 is made with a seat, so that the driver may ride. A frame consisting of as many bars as there are rows to the marker, is put together, and at both ends of each bar a small wooden marker is fastened, which plows a light furrow. By removing the markers and drawing the frame by the side bars across the rows, the seed may be covered and the ground left perfectly smooth and level. The marker in fig. 1 may be converted into a "planker" for the same use, by removing the markers from the plank.

A Gardening Success Under Difficulties.

The Balt. and O. Railroad has several fine hotels along its line for the accommodation of summer visitors. One of the most prominent is the Deer

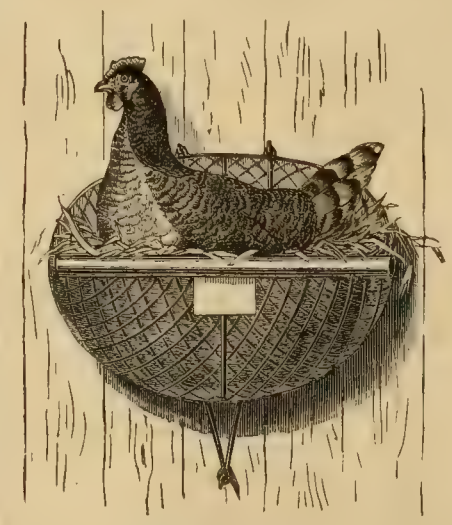


Fig. 3.—WIRE NEST.

Park Hotel, some 200 miles west of Baltimore, and on the summit of the Big Savage Mountain, 2,800 feet above the level of the sea. For such an establishment an abundance of fresh vegetables are necessary, and the managers acted wisely in securing Mr. John Taylor, a market-gardener of experience, from Frederick, Md. He started under the most unfavorable auspices, on land which had never been cultivated, save in the rudest way, and with the assurance of all his neighbors that it would be impossible to establish a garden in such a locality and climate. The season was especially unfavorable, owing to the severe drouth, which checked the growth of the crops, and encouraged all manner of insect enemies, which swarmed from the surrounding woods like the locusts of Egypt. The chance for saving any of the crops was almost a desperate one, and the emergency was met by Mr. Taylor in the most expensive and troublesome, (but in the only sure), way, that is, by hand-picking. For weeks together, morning and night, the whole garden had to be gone over, and the bugs picked and killed one by one. Few men would have had the energy to carry the process to completion, but it *was* so carried, and the result most satisfactory.

We were so much interested in this experiment that we asked Mr. Taylor for a statement of his experience, which he modestly gives as follows:

"I take great pleasure in answering your questions. Of course it can't be expected that I could give a very glowing account of my gardening experiment from one year's trial, for be it remembered, it was only an experiment made under a

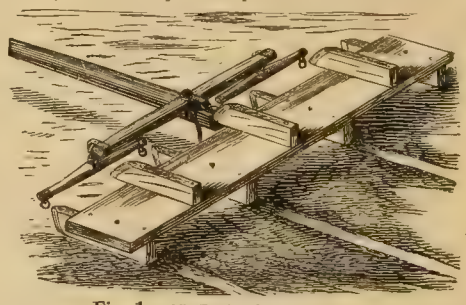


Fig. 1.—SIMPLE CORN-MARKER.

good many discouraging difficulties. In the first place, persons of supposed experience discouraged me, (or tried to do so), by saying hot-bed plants would not do here, and that I could not raise cabbage, sweet corn, etc., on new ground. Others said they were acquainted here for the last twenty years, and more, and never saw any vegetables raised except potatoes. Now, sir, I am happy to be able to state that under all the difficulties, my luck exceeded my brightest anticipations. I raised some of the finest tomatoes I ever saw. Trophy, Hathaway's Excelsior, Tilden, and Large Red. Flat Dutch cabbage was excellent, some heads weighing 25 pounds; the other varieties were early kinds, and all perfect. Sweet or sugar corn was splendid, 'Stowell's Evergreen' was the best. Peas and beans were good. Carrots, parsnips, radishes, beets, and all other roots gave good satisfaction. Cucumbers did better than I ever saw before. Cantaloupes and melons grew very well, only the nights are almost too cold for ripening the fruit. Lettuce good, also celery; in fact all vegetables flourish here, only the seasons are sometimes too short.

"This part of the State is unexcelled for raising oats, rye, buckwheat, and grass, and (I almost forgot to mention it), the potato, which is, I may say, the staple crop here; I have heard a man say he raised as many as 400 bushels to the acre; the same man told me he raised 106 bushels of wheat on 3 acres, or an average of 35½ per acre; still there is very little wheat planted.

"My greatest difficulty was with the Colorado potato-bug, which bid fair at one time to take all my tomato plants, (when in the hot-bed.) The little black beetle, or cabbage flea, is also very destructive; the people here have to raise all their cabbage plants on a scaffold, four or five feet high, or in small boxes; however, I raised all of mine in the hot-bed, although I lost several hundred after planting out. The cucumber bugs also gave me a great deal of trouble, but I kept them down pretty well by going over the vines mornings and evenings

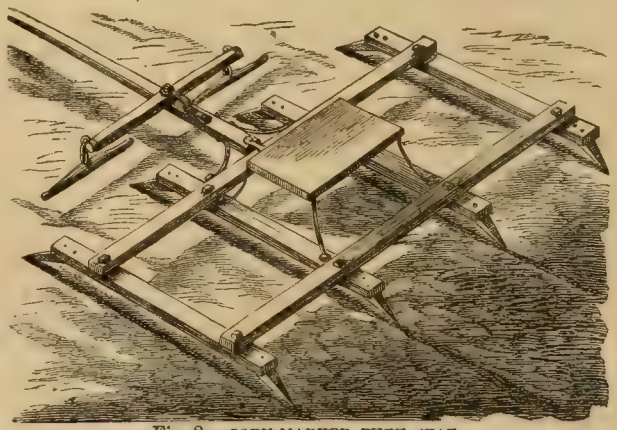


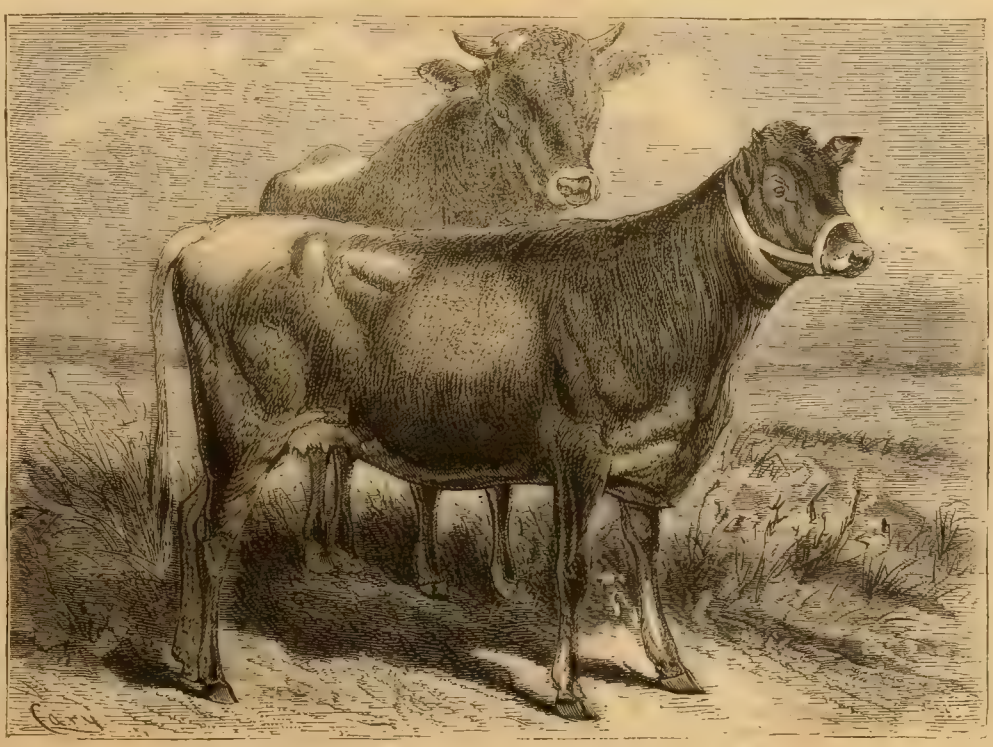
Fig. 2.—CORN-MARKER WITH SEAT.

when the dew was on; that, I think, is the only effectual way to get clear of that pest. But I think the drouth was the greatest difficulty of all. We had not a good rain to plant by from May until the 25th of July; consequently, the plants that were set out made no growth, and the different kinds of vermin seemed to increase."

A Pair of Notable Young Jerseys.

The pair of young Jersey cattle, whose portraits appear in the engraving, are a fresh addition to the herd at Beacon Stock Farm. No first class herd can be kept in vigorous and constantly improving condition, without occasional well selected infusions of new blood —at all events, we know of none that has been so kept. One of the special qualifications of a skillful breeder, is to know how he can add to the excellence of his herd, and how to select the materials with which to effect his purpose. The heifer is Sudbrook Beauty, No. 3,491, A. J. C. C. Herd Book, now eleven months old, but only seven months when this portrait was taken. She is dark fawn, with black points in color, and of an elegant form. Her sire is Southampton, (H. B. No. 117), who is orange brown and black in color, with black switch, and was bred by Mr. Goudin, of St. Martins, Island of Jersey. Her dam is Jewel, (H. B. No. 336), and her grand-dam Gazelle, who was imported by John A. Taintor, of Hartford, Ct. The bull is Young Cossack, (H. B. No. 1,159), eight months older than the heifer, color fawn with black points, and from the same grand-dam (Gazelle) as Sudbrook Beauty. His sire, Clement, H. B. No. 115, and No. 61 in H. B. of R. Ag. Socy. of Jersey, was imported in 1868. The quality of these two animals is excellent. The heifer already shows a great development of milking properties, and the fact that she was bred to Young Cossack on the day that these portraits were taken, shows the remarkable precocity of this breed.

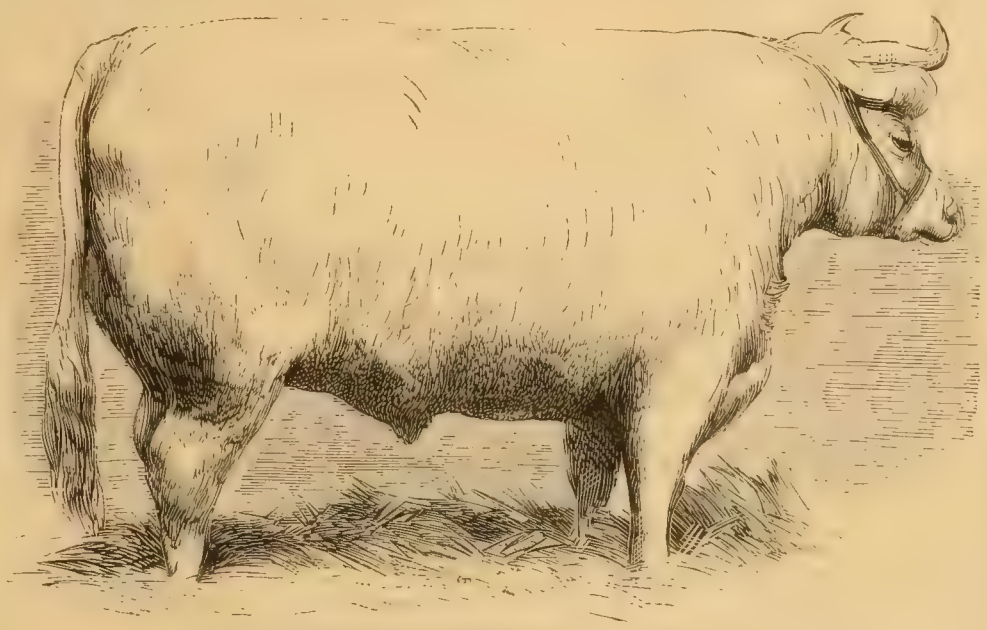
The value of this breed of cattle for dairy purposes is far from being fully developed. Hitherto they have been supposed to be valuable only for the butter dairy. Their excellence in that department of the dairy has become so firmly established that no butter-maker of reputation would discard them from his herd. The half-bred grades when descended from a well selected Jersey bull, inherit the valuable qualities of the breed in a marked degree, and for the purposes of the ordinary dairyman, who cannot purchase the high-priced pure-bred cows, the grades make an excellent substitute. But, although breeders of Jerseys consider their butter making qualities their chief excellence, yet it has been found that they are equally valuable, at least in some cases, to the cheese-maker. Mr. L. B. Arnold, the Secretary of the American Dairymen's Association, who is our best authority on dairy matters, recently informed us that he has seen and tasted some cheese made in Maine from the milk of Jersey cows, which in richness of quality is nearly equal to the famous English Stilton. This cheese has a local market at a high price, and if this fact should lead to the introduction of the Jerseys into the cheese dairies of the country, and to the needed improvement of cheese, it will be a great benefit to breeders and dairymen, and greater still to consumers, who await the advent of a finer American cheese than any our makers now produce.



JERSEY HEIFER "SUDBROOK BEAUTY," AND BULL "YOUNG COSSACK."

A Prize Short-horn.

The Smithfield Club, of London, Eng., which is an association of breeders, graziers, and butchers, holds an annual exhibition of fat cattle. The 77th annual show took place last December. At this show the first prize for aged fat Short-horn oxen was awarded to a white ox, the property of the Earl of Lonsdale, 4 years and 4 months old, weighing 2,586 pounds. A copy of a photograph of this ox is given in the engraving, which is from the Agricultural Gazette, London, and is noteworthy for several reasons. It shows faithfully how a prize fat Short-horn actually appears; it exemplifies the justice of the position taken by that excellent journal in favor of photographs of prize animals, or at least of accurate life-like portraits, instead of those extraordinary products of the artist's imagination, which strike the beholder with wonder, and appear to ordinary farmers as preposterous impossibilities; it goes to encourage the hope that one day our breeders may be induced to assist in educating the public mind up to a just appreciation of the real merits of their stock, and refrain from imposing upon them distorted and unreal representations, and it also gives a hint to our breeders and butchers that an annual exhibition of fine fat stock might be made popular, instructive, and profitable to themselves and to the public. The Short-horn interest needs to be popularized more than it is. The farmers and breeders for market who are really the foundation upon which this interest should and must finally rest, need to be disabused of the idea possessed by many of them, that this is a fancy stock only to be owned, bred, and bought, and sold by men of wealth; and to see them exhibited as beef animals in condition for the market, as well as breeders fit for use, is really the instructive means of popular education that is needed.



PRIZE SHORTHORN OX.—PROPERTY OF THE EARL OF LONSDALE.

The ox in question was sired by Manton, (H. B., number 24,525), out of Annie, (whose number is not given), sired by Breechloader, (23,451). The ox had been fed on linseed cake, corn, a mixed artificial food, hay, and roots. This ox successfully competed with a 5-year old, and heavier animal, which is said to have been the grandest ox since the famous one bred by C. Colling. The competition was close, but no objection has been urged against the decision. Its levelness and fine thighs and twist which are well shown in the engraving, gave the premium to this animal.

VALUE OF THE GANG PLOW.—Not the least of the several advantages of the gang and sulky plows and cultivators, is the ease with which they may be worked by enterprising young women and crippled veterans. An Illinois farmer is a soldier who lost an arm and a leg, yet he does all his plowing with a sulky plow, drives his planter while his boy drops, and uses a sulky cultivator. With the help of these implements, he is able to do a large share of his farm work himself, while with ordinary ones he could do nothing. Another Illinois farmer is a lady, and a widow, who plows, mows, reaps, and cultivates her crops with these riding implements.

Walks and Talks on the Farm.—No. 136.

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The winter has been very severe. With eight horses, nine cows, one hundred long wooled sheep, and over a hundred pigs, we have not been troubled for occupation. The "dull and lonely life of the farmer," which we sometimes read about, exists only in the imagination. There are drones in agriculture as there are drones in all branches of industry. But a real farmer finds no want of incentives to earnest effort. Necessity is laid upon him. Shame be to him who has domestic animals under his care, and neglects to supply their wants. Do not stop to ask if it "will pay?" That is not the question now. You should have asked that before the animals were on your hands. You must feed them, and take care of them, and make them comfortable—or you must neglect them, and let them suffer, starve, or die.

We had four or five days which tested our ingenuity, skill, energy, and promptness. The thermometer one pleasant day stood at 40° in the shade, and 75° in the sun. The snow was melting rapidly, and we heard the agreeable sound of soft water running into the cistern. "To-morrow morning," I said, "we will take some potatoes to the city." Before night the wind began to blow, and the thermometer went down to 20°. We went to bed leaving the question of taking potatoes to the city, undecided. We would wait and see what the morrow would bring forth. It brought a great wind, and the thermometer down near zero. Our record showed three sows due that day. "Give up everything else," I said, "and devote yourselves entirely to making the stock comfortable. Stop up every crack. Keep a good fire in the steamer. Feed a little extra. Do not spare bedding." And still the wind blew. Toward night the thermometer stood 6° *below* zero. "You are wanted in the pig pen," said Willie. I had expected such a message. The situation, when I got there, was not encouraging—four little pigs in a basket, and the sow restless. One pig so chilled that it could not stand. "Had we not better take them to the fire in the steam-house?" "No," I said, "we must bring the fire to them. Go and get a bag of steamed cut straw." In the meantime I put the little pigs to the sow, and covered the sow and little ones with a horse blanket. Then we put the bag of warm chaff under the blanket. The warmth soon revived the little pigs, and the sow lay quiet and attended to her duties. The wind howled outside. Thermometer 13° *below* zero. During the night "No. 6," a favorite sow, gave us nine nice pigs, and we saved every one. Thanks to the blanket.

"Well, after all," said the Deacon, "farming is a pretty slow and discouraging business. We thought we had got a mine of wealth in our apple crop, and now the price is so low that they hardly pay for picking, barreling, and drawing to market. The Squire has got a thousand barrels, and it is hard to dispose of anything but the choicest and largest fruit."—"That last remark," I replied, "is right to the point. We must pay more attention to quality. It is a wise and beneficient law, that the common necessaries of life should be furnished at a price little above the cost of production. Wheat, beef, mutton, pork, cheese, butter, apples, potatoes, and wool, can never long afford extravagant profits. It would be a great calamity should such be the case. It would cause great suffering. The same principle holds in the manufacture of all staple articles in general use. Competition fortunately keeps down the price. The aim of an intelligent manufacturer, is to lessen the cost of production, or to produce a better article. It must be so in farming and fruit growing."

There is no country in the world to-day, where the incentives to better farming are so great, or so numerous, as in the United States. Poor farming is very unprofitable. It gives us a fair crop in a favorable season. "Slovens do well once in seven years," is an old agricultural proverb. Slovenly, slip-shod, hap-hazard farming, occasionally gives a fair crop. When such is the case, in a country so large and so thinly populated as ours, the markets are swamped, and down go prices. This will be the case for years in the future, as for years in the past. Corn will be 25c. to 40c. a bushel in the year when slovens have a fair crop, and 75c. to $1.00 in the years when only good farmers reap good harvests.

Common apples will be no exception to this rule. The only men who will make money out of their apple orchards, will be those who either raise the choicest kinds, or those who, having standard varieties, like Baldwins and Greening, take great pains to keep up the fertility of their orchards, and to raise the largest and fairest specimens, free from specks and the ravages of the Codling moth. Such men will get fair crops in unfavorable seasons, and will then get good prices.

"I think you are right," said the Deacon, "but how are we to keep up the fertility of our orchards. The Squire has over 100 acres of orchard, and it is simply impossible for him to manure his orchards as you do yours."

This is true only in part. I have about 150 bearing Northern Spy trees, which are kept in grass. The grass is top-dressed more or less, nearly every year, and the field is pastured by sheep. The Squire can not adopt this plan with his whole orchard. He can not make manure enough. But I have a row of six Northern Spy trees separated from the rest of the orchard by a rail fence. The land on which these trees grow, is not manured. It is simply plowed and cultivated to kill weeds. No crop is grown. It is kept in fallow. These six trees do nearly or quite as well, and bear as large and as fair fruit as the trees kept in grass and manured. In fact, when J. J. Thomas was here, he thought the trees in the fallowed land made a little the best growth. The Squire could adopt this plan on his hundred acres, *if he would*; but he won't. He wants to eat his cake and keep it. He wants to grow corn, potatoes, beans, wheat, hay, etc., in the orchard, and raise fine fruit besides.

The Squire's trees would do better in fallowed land than mine do, because his land is stronger and heavier; mine is a light sandy loam. I should never think of fallowing such light land with a view to enrich it. The heavier loams or clays, are actually enriched by thorough cultivation. Stirring and exposing the soil to the sun, and air, and frost, developes the latent plant-food which exists in all good clays. The object in cultivating an orchard in a light, sandy soil, is simply to prevent the growth of everything except the trees.

Some fruit growers let weeds and other plants grow, and then plow them under. The objection to this is, that all plants during their growth, take up large quantities of water from the soil, and evaporate it through their leaves into the atmosphere. The soil in the orchard would be much more moist if kept clear and free from weeds, than if the weeds and grass were allowed to grow. I would as soon think of letting weeds grow between the rows of corn, for the sake of enriching the soil, as to let them grow for the same object between the rows of trees.

"But you keep your own orchard in grass," said the Deacon, "and it does not seem to rob the soil of moisture. The trees and branches are full of sap, and the dark green leaves, and the size of the fruit, show plainly enough that the trees get an ample supply of food and water."—There are two reasons for this. 1st. Drouth has comparatively little effect on rich land. The "sap of the soil," as I call it, is rich in plant-food, and the trees can get all the food they need, without absorbing so much water. I suppose, too, that this rich sap has a tendency to close up the pores of the leaves, and thus check evaporation—just as salt and plaster do when sown on wheat and clover fields. 2nd. The sheep eat the grass close to the ground. The blades of grass shoot up like asparagus, and are instantly cut by the sheep. There is little chance for the plants to evaporate moisture. I think this five acre of orchard produces a larger quantity of rich grass, than any other dozen acres on the farm. And what is more, it produces it in the dryest and hottest season, just when the other pastures are bare and brown, and when food is scarce and valuable. Two or three days rest will at any time give me a nice bite of grass for the lambs.

Now if I had the Squire's hundred acres of orchard, I would adopt both of these plans. I would keep all the clay land in fallow, and, in fact, at first I would fallow the whole of it. Then when I had got it as clean and mellow as a garden, I would begin to seed it down with grass and white clover. I would sow 200 lbs. superphosphate, and 200 lbs. nitrate of soda, broadcast, per acre, early in the spring. This would give the grass a good start. When well established, turn in the sheep, and pasture lightly at first.

If bone-dust could be got for $20 per ton, I would use it freely. If the Squire's coarse strawy manure was thrown up into piles, and a little bone-dust, say 100 lbs. to each ton, was scattered on each layer of manure, it would make a capital dressing for his orchard. But in this section bran and clover hay are usually our cheapest manures. I would apply them freely to the newly-seeded orchard. "Broadcast?" queried the Deacon, in a sarcastic tone. "No," I replied, "cut the clover hay into chaff, and put it in racks in the orchard, and let the sheep eat it. They will distribute it more evenly over the land than you can. Let the sheep have some bran put in the troughs every day, say from half a pound to a pound each sheep, and they will mix this up with the grass and clover, and distribute them over the orchard as manure. In some cases oil-cake, half a pound to each, may be fed to the sheep daily, to advantage.

There was a large wool-dealer here the other day, from Philadelphia, and he carefully examined my flock of sheep. I have a few common Merino ewes, grade Cotswold-Merinos, with one, two, and three crosses of Cotswold blood, and lastly the pure bred Cotswolds—all running together in the same flock, and all having the same feed. He pronounced the grade with two or three crosses the most valuable wool in the flock, and the wool on the grades with only one cross, he said, was nearly or quite as valuable as from the pure Cotswolds. "What is the reason," he asked, "that farmers can not produce this grade wool. They are producing less and less of it every year?"—I do not suppose this is the exact truth; I suppose the manufacturers are using more of this kind of wool, and the supply does not, and is not likely to, keep up with the demand.

Now, with the common Merino sheep, kept principally for wool, which can be produced on cheap land, and with comparatively little care and expense, we can not afford to adopt the plan I have suggested, of feeding bran and clover-hay in summer. We can not compete with the large flock masters, who have the free range of thousands of acres of natural pastures, in producing Merino wool. But we can compete with them in producing the best combing wool and choice mutton. As population increases, the demand for good mutton will increase—faster than the supply. It is an interesting fact, that the wool most in demand, and which brings the highest price, should be grown on sheep which produce the cheapest and best mutton.

To go back for a moment to the Squire, with his large farm and large orchard. He has plenty of land on which to keep a large flock of Merino ewes. He could easily keep two hundred. In my own case 60 common Merino ewes, put to a pure bred Cotswold ram, gave me 75 lambs, and I raised 74, and healthier, stronger, hardier lambs I do not desire. At this rate his 200 ewes should raise 246 lambs. He can buy good, strong, healthy ewes in the fall, for $3 a head or less. They should have good feed in the fall and winter. And when the lambs come, the ewes should have plenty of clover hay, and a pound of bran each per day; and a few mangels will also be a great help, but are not indispensable. As soon as the lambs can be taught to eat, say when ten days or two weeks old,

they must have some bran, oats, corn-meal, or oilcake placed in small troughs separate from the ewes. When the lambs are young, this is easily accomplished; all you have to do is to make a place in the yard or field, with a few openings which will admit the lambs, but not large enough for the ewes. After shearing it is not so easy a matter. The lambs soon grow so large, that the small Merino ewes can get through as small an aperture as the lambs. And so ewes and lambs must be fed liberally, keeping the pen and openings for such lambs as are small enough to get through.

And now your luxuriant grass in the top-dressed orchard, comes into play. It will be rich and succulent. If too succulent, the ewes will eat more of the clover hay and bran. If they do not need the hay, they will not eat it. If convenient, let the flock have the range of an ordinary pasture as well. They will keep the rich grass on the top-dressed orchard cropped close, and the large range of common pasture will be good for their health.

After weaning, the ewes can be sent to a poorer pasture, while the lambs have the run of the rich grass in the orchard, and their troughs should be supplied daily with bran and oats, or oilcake meal. It will pay to give them half a pound each of oats or of oilcake meal per day, and all the bran and clover hay they will eat. The probabilities are, they will not eat much, but the more the better, both for the lambs and the land. As they get older, they will eat more. Keep up this extra feed until winter sets in. Then feed liberally, and do not be afraid of the bill for bran, malt-combs, or oilcake. One load of the manure will be worth two or three loads of the old fashioned article. It will not need to be mixed with bone-dust to induce fermentation. I will not stop to say what you should do with the manure. It will come handy for raising a few acres of mangels, or it can be used for top-dressing the grass in the orchard. You will, I think, be so pleased that you will seed down some more of the orchard, and a portion of the manure can be used for this purpose.

The previous seeding should have another dressing of 200 lbs. superphosphate, and 200 lbs. nitrate of soda.—"When would you dispose of the lambs?" asked the Deacon. I *think* I would shear them early, and then sell them. They ought to average 100 lbs. each, and are better worth 10 cents a pound, than common sheep are worth 6 cents. And sooner or latter we shall get what they are worth. They should average 7 lbs. of washed wool, worth now 60 cents a pound. I think we can safely calculate on getting 8 cents live weight for such choice "lambs." The account will then stand:

200 Merino ewes, @ $3	$600
4 pure bred Cotswold rams, at $40 each	160
Cost	$760

RECEIPTS.

Wool from 200 Merino ewes, 5 lbs. each, at 45 cts.	$450.00
Wool from 4 Cotswold rams, 8 lbs. each, at 55 cts.	17.60
Wool from 246 grade lambs, 7 lbs. each, at 58 cts.	998.76
246 grade lambs, 100 lbs. each, @ 8 cents	1,968.00
200 Merino ewes, @ $4	800.00
4 Cotswold rams	150.00
Total	$4,384.36
First Cost	760.00
	$3,624.36

I have estimated the Merino ewes at $4 per head. Owing to their improved condition, under liberal feeding, they will be worth more than this, either to keep for another year, or to sell. The receipts from the flock are $3,624.36 over the cost.

I will estimate that the 200 ewes are fed bran equal to 1 lb. each, per day, for 100 days, and 1 lb. each, of oilcake, for 100 days. This at $20 per ton for bran, and $40 per ton for oilcake, is $3 for each ewe. I do not, of course, mean to that the ewes would be allowed 1 lb. of oilcake, and 1 lb. of bran each, for 100 consecutive days. In the winter there would be days and weeks, when they would have nothing but clover hay, and in the fall nothing but pasture; and in summer, when the grass is good, they would consume very little bran, though allowed all they would eat. And so with oilcake; for a month or six weeks before lambing, they might be allowed ½ lb. each, per day, and then after lambing, increase it gradually to ¾ lb., or even to ⅞ lb., with 1 lb. of bran in addition. When turned out to grass, the oilcake and bran should be continued in greater or less quantity, according to circumstances. The amount of oilcake, and bran that I have stated, will afford a liberal allowance. For the 246 lambs I will allow 1 lb. each of bran per day, for 200 days, or 24⅔ tons; and 1 lb. oilcake each, per day, for 150 days, or 18½ tons.

The account for purchased food, will stand thus:

200 ewes, 1 lb. bran each, 100 days, @ $20 per ton	$200.00
200 ewes, 1 lb. oilcake each, for 100 days, @ $40 per ton	400.00
246 lambs, 1 lb. bran each, for 200 days, @ $20 per ton	492.00
246 lambs, 1 lb. oilcake each, for 150 days, @ $40 per ton	840.00
	$1,932.00

I will say nothing about the value of the manure obtained from the grass, clover hay, and straw, which the sheep consume. It would make a good showing. But it has nothing to do with the question we are considering. We should have this manure whatever stock was kept—or whether it was fed to stock or plowed under. We have to do only with the food. Taking Mr. Lawes' estimate of the value of the manure obtained from the consumptiom of different foods, we have the following result:

44⅔ tons manure from bran, @ $14.36 per ton	$640.45
28½ tons manure from oilcake, @ 19.72 per ton	562.02
Total value of manure from purchased food	$1,202.47

The account then stands:

Cost of sheep	$760.00
Cost of purchased food	1,932.00
	$2,692.00
Receipts from sheep	$4,384.36
Value of manure from purchased food	1,202 47
	$5,586.83

This leaves $2,893.83 to pay for pasture, hay, attendance, etc.

These figures have put the Deacon to sleep, and so I am not able to record his comments. When he sees them in the *Agriculturist*, he will do his best to pull them to pieces. My opinion is that they will bear investigation. The subject is certainly an important one, look at it from whatever point you may. We want more combing wool; we want better mutton; we want to cultivate our land better; we want more manure. We are told this kind of high feeding will not pay; we are told that the fertility of our apple orchards can not be maintained.

I know I am talking too long on this subject. But on the latter point I want to say one word. If you aim merely to *maintain* the fertility of the orchard, it is doubtful whether it can be accomplished with profit. You must *increase* the fertility. My land will produce 100 bushels of potatoes per acre. Now if I want to make or buy manure enough to merely keep up the land to this degree of productiveness, I know not how to do it with profit. But if I can make my land clean, and at the same time produce clover sufficient to enable me to keep good stock, that will consume with profit bran, and oilcake, and malt-combs, and thus give me rich manure enough to produce 300 bushels of potatoes per acre, I can see my way out of the difficulty. You figure up the profits from 100 bushels of potatoes per acre, after deducting the rent of land, cost of plowing, manuring, planting, cultivating, hoeing, and digging; and then the profits from a crop of 250 or 300 bushels per acre, and you will see the point I wish to make.

With the orchard the result is the same. We must make the land rich enough not merely to give large crops in favorable seasons, but good crops in unfavorable years, when the price is high. Furthermore we must make it rich enough to produce apples of good size, and free from specks. We must look more to quality. It makes a great difference in the *profits* of an orchard, whether you get 200 bushels of small, knotty fruit, worth 30 cts. a bushel, or 250 bushels of fine, fair fruit, worth $1.00 per bushel. And there is fully this difference between a neglected orchard, and one in the highest state of fertility.

I believe the grass on my orchard has more than paid me for all the manure I have put upon it. And it is paying better and better every year, as the land gets richer. If I had used only half the manure, it would not pay half as well. It would have given me a quantity of poor, watery grass, in a "growing season," when pasture was abundant; but when other pastures failed, it would have failed also. Now, no matter how severe the drouth, the grass in the orchard is always green. And I need hardly say that the grass which grows on rich, dry, upland, in a dry, hot summer, is very nutritious. It is this rich grass that will enable you to turn off lambs weighing from 100 to 125 lbs., at twelve or thirteen months old. In addition to this, you must take into consideration the fact that the land will produce large, fine fruit, even in unfavorable seasons. I hope my readers will excuse me for talking so much about thorough cultivation, good stock, liberal feeding, and high manuring. It is not easy for a farmer short of capital, to get started, but it is worth an effort. It becomes easier every year.

Baling Hay for Market.

The production of hay for market promises to become a remunerative business over a wide extent of the country. The great demand for it is in the large cities, and the cost of packing and freight will determine from how great a distance this demand may be supplied. If by an economical mode of packing, the great eastern cities can be profitably supplied from Ohio or Michigan, a vast advantage will result to both consumer and producer; to the one the source of supply will be extended, and the hay cheapened or rendered more certain in times of scarcity; while to the other the market will be extended, and the sale more sure, although the price be not increased. Hay costs less in labor to produce it, than any other farm crop. By proper

Fig. 2.

cultivation, and the use of appropriate artificial fertilizers, and in some cases by convenient irrigation, hay can be cheaply raised upon a great variety of soils. It is the cost of transportation that is in the way of its being a profitable crop. This cost, however, is now reduced to a minimum, by a method of packing in compact bales, by the Dederick Perpetual Press. Packed in these bales, 8 tons of hay can be put into a common box freight car, and by using cars especially provided for this traffic, as is now done upon the N. Y. Central R. R., 10 tons can be carried in a car. This then greatly extends the area from which hay can be profitably shipped to eastern, or even to local western markets. The press is shown at fig. 1 (see next page); it is operated by a one or two horse-power, and is built upon an entirely new plan. The hay thrown into the hopper, is pressed down by the beater, and forced forwards by the follower, (see fig. 2), in the shape of a compact folded layer, (fig. 3). This

Fig. 3.

Fig. 4.

layer is held in place by a spring of steel around the pressing chamber, which permits the hay to pass it, but closes upon it when it has passed, and retains it in the chamber, while the follower is withdrawn for another charge. The action of the spring is shown in figure 4. In this way the chamber is filled by a succession of layers. The bales

may be made of any size and length, by means of a partition or tying followers, and the bales are tied either with or without laths, by wire bands, while the pressing is going on. The bales are discharged by the pressure of the hay behind them, without any help. The manner of their delivery is seen at figure 1, in which the side of the hopper is removed, to show the screen by which dust is discharged from the hay. The bale appears as shown at fig. 5, and being made up of a number of layers, is especially adapted to the needs of retailers of hay, and those of consumers, as waste is prevented in the using. The most desirable size of bale, is 18 × 24 × 36 inches; one hundred and forty-four of these may be put into a box freight car, and if made of 112 lbs. weight, 8 tons would make the load; if the bales weigh 140 lbs., the load would be 10 tons. With this press, cut hay may be packed into bales as well as long hay, and even sawdust has been packed by its use into solid bales. The value of such a press can hardly be estimated by those western farmers, who raise hay for shipment to southern markets, or to the mining regions of Colorado, Utah, and Nevada. It is also equally well adapted to the use of the cotton planter, for baling cotton. A two-horse-power is able to bale 3,000 lbs. of hay, pressed so as to make 8 tons to the car load, in an hour; a one-horse-power will press bales to make 6 tons to the car load, requiring only one man to pitch. These presses are made by Messrs. Dederick & Co., of Albany, New York.

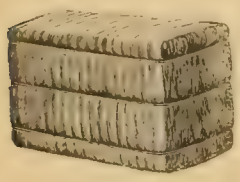


Fig. 5.—BALE OF HAY.

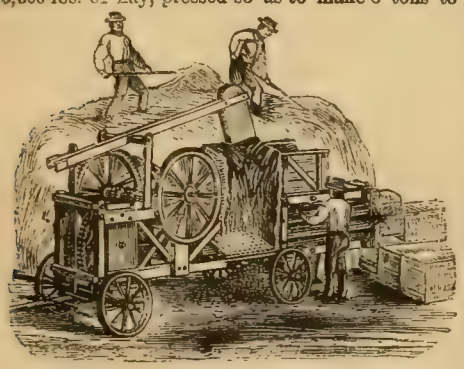


Fig. 1.—DEDERICK & CO.'S HAY-PRESS.

Sail-Boats and their Rig.

In the *Agriculturist* of October, 1872, there was illustrated the manner of making a boat for rowing. A great number of our younger readers have asked for similar directions to make a sail-boat, which are here given. The sail-boat is only different from the row-boat previously described, in having a deeper keel. To sail well, a boat should have a keel about six inches deep. This may be fitted to a smooth-bottomed boat, by bolting to it a strip of 1¼-inch plank of the proper width. The mast is "stepped" or placed into a hole through the first seat or "thwart," and into a socket or block beneath it, upon the bottom of the boat. No stays are needed, as the strain upon it is very little for a light boat. The sail is the chief thing. This may be made of any strong cloth. For a boat of 12 feet keel and 3 feet beam, the stoutest sheeting may be used, for larger boats "duck" will be needed. The sail should have a strong cord bound in the edge all around it, and at the corners, where eyes or loops are needed, a double patch should be stitched to strengthen it. The sail in common use is what is called a "sprit-sail," and is seen in the boat on the left hand in the engraving. It is generally laced to the mast, and when not in use, is wrapped around it. It is spread by means of a sprit, which fits above in an eye, at the upper corner or "peak" of the sail, and at the lower end into a loop of rope, fastened to the mast, and which in large boats is tightened by a rope passing through a pulley on the mast, and wound around a cleat near the pulley. The lower end of the sail is held by a rope, called a "sheet," which is fastened to an eye or loop at the corner of the sail. This sheet is held in its place on either side of the boat by winding or "belaying" it around a cleat, or by making it to run on a ring, which slides upon an iron rod across the upper part of the stern of the boat, called a "horse." The mast is a light spruce pole, 9 feet long. The sprit is a still lighter pole, also 9 feet long, tapering at each end. The sail may be made 6 feet wide at the lower edge, and 4 feet at the upper; the outer side should be a foot or more longer than that next the mast. The "sheet" is a strong rope, an inch and a half in circumference, and should be at least 12 feet long, so as to have plenty of end to spare. A different form of sail is shown in the right-hand boat; this is laced to a "yard," or light pole, which is hoisted to the peak of the mast by a halyard, working in a pulley, and fastened to a cleat at the side of the boat. The tuck or forward lower part of the sail is hooked to the stem of the boat by a loop, which allows the yard to swing from one side to another, as the "sheet" is moved at the stern. When this sail is furled, the yard is lowered, and stowed in the boat, being only two feet shorter than the boat. This makes a very good rig, but having only a very short tack, should be used only by experienced persons. The sail first shown is the best one for beginners to use, as with it the boat can go directly with the wind, which is the safest way for learners to begin to sail a boat. But as there are many things to learn by practice, before one can safely navigate, and as it is very dangerous pastime to attempt to do it, before one has learned, no one should do this, or even enter a sail-boat, unless accompanied by a person who is able to manage it, and is able to teach others all about it. If one is a good swimmer, he may be less careful about it, but even then he will be certain to get many a wet jacket, before he learns how to sail about without help from an expert.

DIFFERENT RIGS OF SAIL-BOATS.

How to Lace a Belt.

The belts in country mills and in thrashing machines are often very badly laced, it being a matter to which few mechanics, and still fewer farmers, give sufficient care. If a belt is not properly laced, it will not run true or evenly, and there is loss of power. When tread-powers are used, a badly laced belt may cause an accident to the horses by flying off or by breaking; this can hardly happen if the belts are properly laced. Accidents do occur so frequently as to cause an unfounded prejudice against tread-powers, and the cause is almost always the slipping, flying off, or parting, of the belt through bad lacing. To lace a belt properly, its ends should be cut exactly true; a square should be used to do this to make sure work. A row of holes should be made with a proper punch, smoothly and evenly, and not cut with a knife and made unevenly and with broken ragged edges. Then a second row of holes, smaller than the first, is punched directly behind the first, and in the same manner. This is shown in fig. 1. The lace should be cut eight times as long as the belt is wide, and before it is used should be well stretched. The lacing should be begun from the inside of the belt. The lace is put through the holes nearest the end in opposite ends of the belt, commencing at one edge, and drawn up until the ends of the belt are brought together, and the ends of the lace are of equal length on the outside of the belt. The ends of the lace are then passed across and put through the same holes from the outside to the inside, and then brought up again as at first outside of the belt. The ends are then put through the holes immediately behind them, and then through the first holes, and are drawn tight. One set of holes is now laced, and the lace is outside the belt. The ends are then crossed and passed down the next holes of the first row, and the lacing repeated as before until the whole is complete. The whole lacing will be alike except that there will be three thicknesses of lace at the edges of the belt, and but two in the inner holes. This, however, is an advantage, as the edges of the belt should always be laced firmly. Fig. 2 shows the inside of the belt when laced, and fig. 3 the outside. Care should be taken to fasten the lace well by a firm knot upon the outside. Laced in this manner, a belt will run true and smoothly.

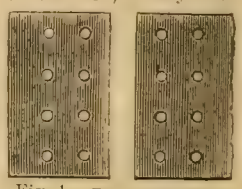


Fig. 1.—ENDS OF BELT.

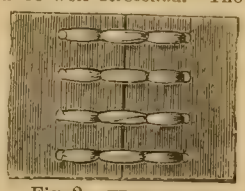


Fig. 2.—UPPER SIDE.

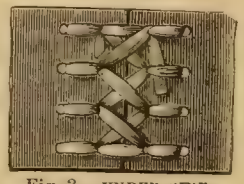


Fig. 3.—UNDER SIDE.

A Cheap and Handy Feed Cooker.

A few years ago the writer, when in Kentucky, saw a method of cooking corn in the ear, and other feed for hogs, which may be used by farmers who have not the means to buy any of the more economical but more costly kinds of cooking apparatus. It is built on the ground, of stone or brick, or where these cannot be obtained, as out on some of the new prairies, a pit may be dug in the ground for the purpose. The furnace may be six or more feet long, three feet wide, and two feet or 18 inches high. A feeding door for fuel, (*a* fig. 1), is made at one end, and a chimney or stove pipe, (*c* fig. 1), is built at the other end. About one-third of the distance from the door a wall, (*b*), is built across the furnace to within six inches of the bottom of the boiler. This is to throw the fire up to the boiler, thus economizing the heat and saving fuel. The boiler is placed upon the fire pit. It consists of a piece of sheet iron 3 inches larger every way than the intended size of the boiler. A box frame of plank 2 inches thick and 8 inches wide, is made and set upon the sheet iron. The edges of the iron are turned up around the sides and ends of the frame, and nailed closely with broad-headed nails, so as to be water-tight. The furnace, if built of brick or stone, is then banked up on three sides with earth, by which it is made tight, and the heat is retained. Five or six dollars will be about all the outlay, as the wall may be built up dry or laid in tempered clay and renewed at each feeding season. Brushwood, chips, weeds, corn cobs, or even ropes of coarse prairie-hay may be used as fuel, and but little fuel is required if the pit is made tight and built with the cross wall. A boiler of this description may be made to last several years if it is taken up and stored in a dry place when not in use.

Fig. 1. GROUND PLAN.

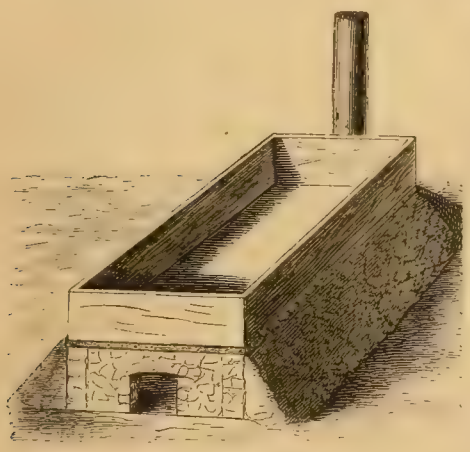


Fig. 2.—FEED COOKER.

Reclaiming Peat Swamps and Wet Prairie.

A subscriber in Illinois, not far from Chicago, has a wet section of prairie upon his hands, and as a large number have similar lands, that they wish to reclaim, we give the case to our readers. He says: "The question is, what are we to do with our hundreds of acres of low, marshy, peat land? It is a matter of experiment with all of us so far, and within the last three years, they have become so dry that the most of them would bear up a team without drainage. Scarifying the surface and sowing with grass seed does not seem to answer. I have 120 acres of this peat land, in which I can find no bottom. It seems to be a sort of vegetable matter partially decayed. I have deepened the outlet about four feet, and cut large open ditches about six feet wide and three deep. After draining last fall, I plowed about sixty acres, and this is as far as I have got. Have I sunk the water low enough or too low to raise a crop? Then, if I plant my crop in this light soil, what will become of my potatoes when the surface becomes so dry that the wind will blow it away? How dry will this soil get? Last season when the grass grew it dried down two feet or more."

There are large tracks of land of this character in the prairie regions that have attracted little attention thus far, because there have been unlimited quantities of cheap uplands all around them, all ready for the plow. It would not pay to drain such lands at a cost of forty dollars an acre, while adjoining dry prairie could be bought for ten to twenty dollars an acre. But as the population has increased, and farms have risen in value to fifty and a hundred dollars an acre, the possibility of reclaiming these wet places has attracted attention. They are as rich as the adjoining lands, and probably richer, if they can be drained and made solid enough to bear up teams. Our subscriber lives near good markets, and the land is appreciating in value. The time has probably come when it will pay him to drain his land thoroughly, and cultivate it in the ordinary crops of the farm. The question is one of drainage, which he can easily decide for himself. The land now is without value. If he can drain it for forty dollars an acre, and make it pay the interest on twice that sum, he has a good job, and can afford to use capital freely in ditches and drain tile. The surface draining is better than nothing, but only a partial success can be gained with this. The proper thing to be done is to have the whole bog thoroughly drained with tile. This would cost, in the older states, near a tile factory, about forty dollars an acre. The outlet, if possible, should be at least five feet deep, the main drains four, and the cross drains at least three in the shoalest places in the center of the plats where they commence. As the water is drained off, the surface of the swamp will grow compact and find a lower level. Allowance must be made for this sinking in laying the tile. Drainage will increase the moisture of the land in summer, and cultivation, with the use of the roller, will help to make it more compact. Chicago probably contains the draining material, and the engineers, who can tell him what the job would cost. He will find works on drainage in our list of Agricultural Books.

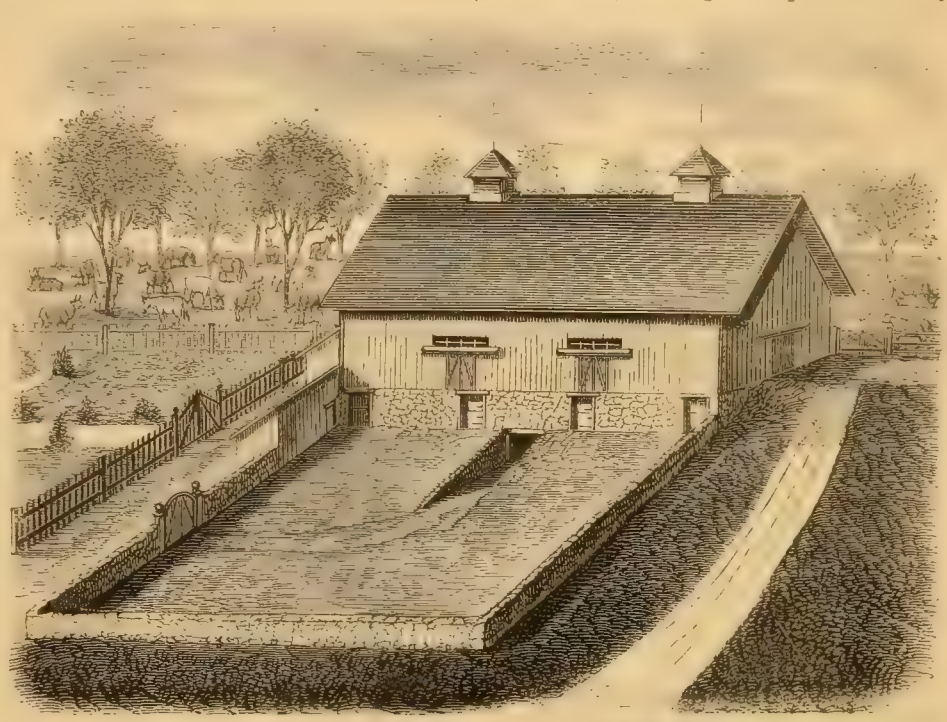


Fig. 1.—A NEW YORK DAIRY BARN.—(*See page* 140.)

Chicken Coops Made from Barrels.

Very good Chicken Coops may be made of old flour or fruit barrels. One way in which they may be made, is by removing the hoops from one end, and putting them inside, in such a manner that the staves are forced apart on one side, as shown in fig. 1. The barrel is set on the ground, with the opened staves downward. On the other side of the barrel the staves should be kept close together as a protection both against the weather and vermin. Another way is to cut through each alternate stave, in lines, about 3 inches from each other. The halves of the barrels then taken apart, and set bottom upwards, make very good coops as shown at fig. 2. If a piece of leather is fastened upon the top of one of these coops, so as to form a handle, it may be lifted and moved to fresh ground very readily.

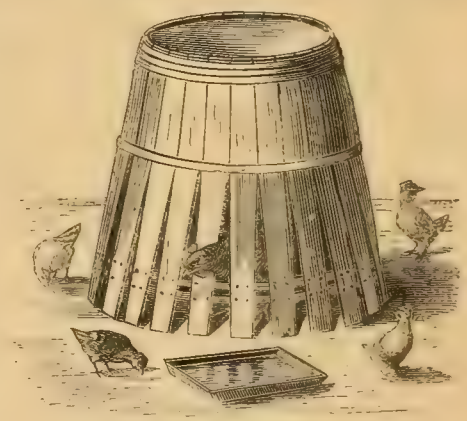


Fig. 1.—COOP WITH SPREAD STAVES.

Fig. 2.—COOP, BY SAWING OUT STAVES.

A Dairy Barn.

An Ohio correspondent asks for a plan for a dairy barn, in which 100 cows may be kept. Recently we had an opportunity of visiting some milk dairy farms in Westchester Co., N. Y., and were pleased with the convenience of the barns and stables, built by some of the largest farmers, after long experience had shown what could best meet their needs. The business is almost wholly the production of milk for the New York market, and some of the barns are made to accommodate 80 to over 100 cows. The general style of the best of these barns is shown in the accompanying illustra-

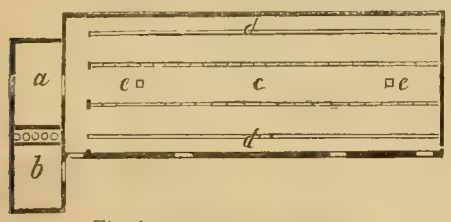


Fig. 2.—PLAN OF BASEMENT.

tions. Figure 1 (which is given on page 139) represents the elevation of the barn. It is situated upon the side of a hill, in which the basement stable is placed. The basement is of stone, and 9 feet high. The barn is 20 feet high above the basement, 80 feet long, and 28 feet wide. The yard is surrounded with a stone wall, and a manure pit is dug under the center of the building, large enough to back a wagon into. No manure is kept in the yard, which is thus always clean and neat, but it is raked into a wagon, which is backed into the pit to receive it, every morning, and carted away. Nothing is thus left to taint the air around the stable, and to vitiate the purity of the milk. At the left of the yard, adjoining the stable, is a spring-house, in which the milk is rapidly cooled, and kept cool until the time for shipment. Behind the spring-house, and immediately at one end of the barn, is the pit for storing brewer's grains, of which a portion of the feed consists. These grains, purchased from the ale breweries, contain a large portion of corn meal, which is now extensively used in brewing, and are both nutritious and wholesome food. It is a mistake to suppose that brewer's grains are either unhealthy or improper food, or tend to produce any but the best of milk. Grains are simply crushed malt, which has been deprived of its sugar by the process of mashing, and contain, when in a dry condition, only very little less milk-producing nutriment than the barley from which they were made, the loss being chiefly starch or carbonaceous matter. The daily ration given to the cows upon these milk farms, is usually half a bushel of grains, in which there is a considerable portion of corn meal, and six to eight quarts of dry corn meal, with as much hay as they care to eat. Where no grains are fed, the ration is 8 quarts of corn meal with hay. The pit in which the grains are stored, is a deep cellar, walled with stone and cement, and covered with a roof. A door from the bottom of the pit opens into the stable, and permits the removal of the grains as may be needed. In this pit several thousand bushels of grains may be stored, and being packed down closely, and kept from access of air, may be preserved in good order for months. It is upon a similar plan to this, that French farmers are now preserving their corn-fodder in a green state, until the new crop comes in. The basement has four doors, and is amply lighted and ventilated. The floor is divided in the center by a wide feed-passage, upon each side of which are stanchions to hold the cows. There are no feed troughs, but the feed is placed upon the floor before each cow. The stanchions are made of oak, are self fastening by means of an iron loop, which is lifted as the stanchion is closed, by its beveled end, and falls over it, holding it securely. The space between the stanchions for the cow's neck, is six inches. Each cow has a space of three feet, and there are no stalls or partitions between them. The floor, upon which the cows stand, is 4½ feet wide; behind this is a manure-gutter, 18 inches wide, and 6 inches deep, and behind the gutter a passage of 3 feet and 6 inches; in all giving a space of 14 feet from the center of the feed-passage to the walls upon either side. This is shown in fig. 2 in plan, and in section in fig. 3, in which *a* is the grains-pit, *b*, the spring-house, *c*, the feed-passage, and *d* the manure-gutters. The barn-floor is shown in fig. 4. There are four bays and three floors. Two of these floors have slide-doors, opening into the barn-yard, and spacious windows above them, as seen in fig. 1. Hay-shoots are made in the floors, by which hay is thrown down into the feed-passage. These, which are shown at *e*, *e*, fig. 3, also serve for ventilation, in connection with the cupolas upon the roof. The most complete barn in this locality of good barns that we visited, is that of Mr. J. D. Powell, at Unionville, who keeps 180 cows, but as we had not an opportunity of sketching that one, we made drawings of one upon almost exactly the same plan, however, owned by Mr. Brady, of Katonah. To visit these dairies would be instructive to dairymen of other districts, but most especially to those who consume the milk, and who have been taught to look with indiscriminate suspicion and dread upon all milk which comes to the cities, as springing from sources that are objectionable, if not unwholsome, for in no dairy that we ever visited have we seen greater

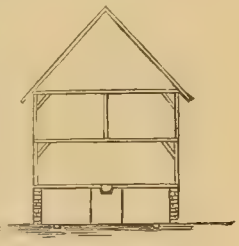


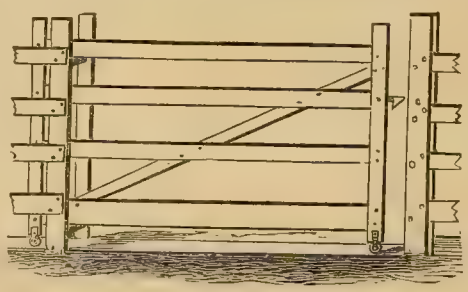
Fig. 3.—SECTION.

Fig. 4.—PLAN OF FLOOR.

cleanliness, better feeding, more attention to the comfort and health of the cows, greater system and care in the manipulation of the milk, nor have we ever tasted richer or better milk, than in the dairies of the gentlemen mentioned.

Another Sliding Gate.

Sliding Gates have been found to be so useful and convenient, that scores of patents have been taken out for various styles of them. A kind that is not patented, and never can be legally, is shown in the illustration. It is intended to go with a board fence, although it may be covered with pickets, and used with a picket fence. It is made of fence boards. There are no mortices or framing about it. The posts are double strips, which are fastened on



A SLIDING GATE.

each side of the bars by wrought nails, or carriage bolts, and a brace is fastened to the bars and posts. A small wheel, or roller, is fastened to the bottom of each post, and a board is laid down for them to run upon. To keep the gate in place, a post is driven into the ground a few inches from one of the fence posts, and two round wooden pins are put through both the posts to hold them together. The gate moves upon the rollers, and does not slide upon the pins. The principle upon which this gate is made, has been applied to barn doors for a great many years, and as it is not really a slide-gate, or such as is usually called a slide-gate, it conflicts with none of the patents by which so many farmers are continually annoyed. The fastening is a catch loosely pivoted upon a carriage bolt passed through the post of the gate, and which slides over and hooks to a carriage bolt or pin in the fence post, as seen in the engraving.

The Management of Young Turkeys.

The turkey crop is growing in importance every year, especially in the older States, and without doubt increasing in size and profit. Flocks averaging 13 to 14 pounds, dressed for the eastern markets, which requires the removal of crop and entrails, are not uncommon. On many farms it is a reliable source of income, yielding from two hundred to six hundred dollars annually. There is a great difference in the success of farmers, owing to the difference in the skill in managing the young birds. The first step in raising turkeys is to have them well born. And to this end the stock should be carefully selected, whether it is young or old. We prefer an adult cock, from 23 to 35 pounds, and if we had such a bird, should keep him for three or four years without change. If a cockerel is used, he should weigh from 20 to 25 pounds at eight months old. If he reaches thirty pounds, or about that, in his second autumn, he is a good bird to breed from for the next four or five years. The male bird, of whatever variety, should be as perfect as possible in plumage, in shape, and in weight. If a strong, healthy bird, and well bred, he will leave his mark upon every one of his offspring, however large the flock. As a single act fertilizes a whole clutch of eggs, one gobbler is sufficient for 15 to 20 hens, and that is as many as is desirable to keep on any farm, however large. Some of our most successful breeders keep only 10 or 12 hens. In selecting hens we prefer yearlings to pullets, and if satisfactory in every respect, should keep them four or five years. They lay larger eggs and bring stronger chicks. If pullets are taken, use nothing under 13 pounds at eight months old, and if 15-pound birds can be had by paying double prices for them, secure them by all means. The larger the adult hens the better. The hens should be put with the gobbler as soon after February 1st as possible in the northern states. They will not begin to lay before the last of March. They should have nests prepared for them near the house or barn, in an old barrel or box, that can be closed at night, so as to protect the bird while sitting upon her eggs. If the nest is covered with brush or old boards, so as to be screened from observation, they will be much more likely to resort to it. They will require some watching as the laying season approaches, to prevent them straying into the woods. It is a matter of great importance that they should lay near the house, where they can be protected while sitting. The eggs should be carried into the house as fast as laid, be placed in a large flat dish, and be turned bottom-side up every day. When the brooding season comes on, place from 15 to 17 eggs under each hen. Cover the mouth of the box or barrel every night, and keep food near the nest, or watch for the bird every day as she comes off, to see that she is well fed. The eggs, if well cared for, hatch with more uniformity than those of any other domestic fowls. Let her take her own time to leave her nest with her young ones. When the mother bird is ready to take the field, put the young ones in a triangular pen, made of boards about 12 feet long and one foot wide, set up edgewise. This pen will restrain the young ones for ten days or more, and when they can fly over the boards, it will be safe to give them more liberty. Feed at first with hard boiled egg, or with beef chopped fine. Also give them coarse ground Indian meal scalded, and mixed with milk. This meal and milk, as much as they will eat clean, is about the best food they can have for a month or six weeks. If well fed early every morning, which means as soon as birds come off from their roosts, they will not wander much in the wet grass. As the sun gets up they should be driven afield, if they

do not go of their own accord. After about six weeks they will get nearly all their living in the fields and woods. If fed regularly at night they will come home early and go to roost. They should be seen and counted every night upon the roost. Particular attention in these small things is generally the measure of success in turkey-raising.

About Snake's Eggs.

BY PROF. G. BROWN GOODE.

Mr. J. C. Christian, of Huntington, Ind., writes: "I have several times killed water snakes, which, when opened, contained upwards of twenty good sized young snakes, from six to seven inches long. Last summer, after pulling out a large stump, we found twenty-seven eggs, which we broke, finding in each a well developed young snake about nine inches long; afterwards we found and killed two snakes near the same place, about four feet long, and resembling the snakes in the eggs, and I supposed they deposited the eggs. I am satisfied that some snakes bring forth their young alive, while others lay eggs. Now is there any other class of animals which have more than one way of reproducing their young."

Mr. Christian has determined for himself a fact which has long been known to naturalists. Some snakes *do* lay eggs, while others give birth to living young, yet the difference is not so great as it may at first appear. We all know that every animal, in its earliest stages of development, is enclosed within the walls of an egg. That all life is produced from eggs, "*Omne vivum ex ovo*", is an adage handed down from the earliest times, and modern investigations have confirmed its truth.

Animals are either *viviparous*, *oviparous*, or *ovo-viviparous*. The first class includes all the highest animals, the *mammals*, or those which suckle their young; and in these the young animal derives its nourishment from the system of its parent, until it is strong enough for an independent life. In the other two classes, which ought really to be considered as one, the young animal is walled up at an early period within the outer coverings of the egg, and as it is now entirely separated from the parental system, it is nourished by a supply of nutritious material stored up within the egg, and which we call the *yolk*. When the young animal is sufficiently grown to care for itself, and the yolk of the egg is all used, it bursts the envelope of the egg, and is born. To this class belong birds, reptiles, batrachians (frogs, toads, etc.), fishes, insects, crustaceans (crabs and lobsters), worms, mollusks, and all the lower animals. *Oviparous* animals are those which "lay" their eggs to be hatched by the warmth of the parent's body, as in most birds; by the warmth or the soil or sun, as in reptiles; or by the warmth of the water, as in fishes. *Ovo-viviparous* animals, are those which do not lay their eggs, but retain them until the envelopes are broken, so that the young are born alive. The casual observer would be very likely to call these *viviparous*, but a study of their anatomy shows us that they are very close to the *ovipara*; in fact, the only difference is this, that the egg is delayed a little longer in the former, so that it is hatched *just before* it is laid. This point established, it is not very hard to comprehend how it is "that some snakes bring forth their young alive, while others lay eggs." I know of a case where one of our common striped snakes (*Eutaenia sirtalis*) was kept in confinement, and having no satisfactory place in which to lay its eggs, retained them until after they were hatched, thus giving birth to its young alive. The same thing has been known to occur in the common English lizard, (*Lacerta agilis*), which is also usually oviparous. We find the same thing in other groups of animals; thus many of the sharks and skates of our sea coast, are oviparous, while others bring forth their young alive. The minnows (*Cyprinodentidæ*) of our brooks, show the same differences of habits, and parallel cases occur among frogs, snails, insects, and worms.

I can not state which of our species of snakes are *oviparous* or *ovo-viviparous*, for the very good reason that nobody knows. It is possible for the readers of the *Agriculturist* to make some very interesting contributions to science, by telling what they have seen. The breeding habits of most of the reptiles of North America are *totally unknown*. We know that the Rattlesnakes, the Copperheads, the Massaugas, the Mocassons, and some of the water snakes are usually *ovo-viviparous*, and that the Smooth Blacksnake, (*Bascanian constrictor*), the Milk or House-snakes, (different species of *Ophibolus*), some of the Bull-snakes, (species of *Pityophis*), the Grass-snake, (*Liopeltis vernalis*), and one or two other kinds, are usually oviparous, but of three-fourths of our snakes we know absolutely nothing.

It is probable that the young water snakes which Mr. Christian found inside of the larger ones, had been swallowed for temporary protection, and would soon have crawled out of their parent's mouth, had they not been prevented. The new-born water snake is not so long as six or seven inches.

[A year or two ago, the readers of the *Agriculturist* contributed a great mass of evidence, which went far to settle the question, "Do snakes swallow their young?" Every farmer, and every farmer's boy, and frequently the girls, can do something to add to the general stock of knowledge, and would be glad to do so if they only knew how. In this article Prof. Goode tells us one thing that they can do—to observe the manner in which snakes reproduce, and other methods will be pointed out in due time. To be very useful to science, one needs only a good pair of eyes, and a determination to use them. Record only what is seen, but do not see a part, and infer how the rest may be. The books are full of inaccurate observations, made by persons who tell more than they see. While we expect aid from those who can make observations in the field, we, on the other hand, would like to aid them, and if they come across things in regard to animals of all kinds, or plants, that they would like to have explained, they must send us their questions. ED.]

Manure from the Sea—Fish-Scrap.

The Menhaden Oil and Guano Company report 50,976 tons of scrap made in the whole country last season. This we believe is a larger product than was ever made upon our coast in any one year. It took to make this quantity of manure 1,474,638 barrels of fish. Reckoning 200 fish to the barrel, this would give 294,927,600 as the annual catch of bony fish. The number of fishermen employed is 1,567; the number of persons employed in the manufacture, 871; vessels engaged in the business, 283; steamers, 25; factories, 64; amount of capital invested, $2,500,000. The oil extracted from the fish was 3,372,837 gallons—worth about a million and a half of dollars. The scrap at the factories is worth about 12 dollars a ton, making over $600,000, or $2,100,000 as the annual return for the Menhaden fishery. About 30,000 tons of Peruvian guano are annually used in this country, for which fish-scrap is the best substitute. The ammoniated superphosphates draw their ammonia very largely from fish-scrap. Notwithstanding this immense slaughter of the Menhaden every year, there seems to be no appreciable diminution of their numbers. It is but as a drop in the bucket in comparison with the destruction wrought among them by sharks and other voracious fishes. This wealth drawn from the sea by the Menhaden fishery furnishes us with one of our most valuable fertilizers. Thus the waste of our farms carried off by every stream that runs to the sea is in this manner partially restored.

FIELD BEANS.—The bean crop is worthy of a place in a rotation, not only for its profit, but for its influence upon the soil. It takes little from the soil; is a cleaning crop; requires little outlay for seed, occupies the ground but a short time, and may follow a crop of clover the same season, if an early ripening variety is chosen. The "Medium" ripens early, is hardy, but sells at a lower price than the "Marrow." The "Marrow" is very productive on a good soil, and is a popular market variety. If properly harvested, the haulm is much relished by sheep, and is nutritious. The bean when ground with corn or oats, is readily eaten, and when cooked pigs will accept it with avidity. No food is better for a growing animal, nor contains more flesh-forming elements than this bean. The idea, however, that beans may be grown with profit upon a soil too poor for any other crop, is erroneous.

Practice and Science Agree.

BY PROFESSOR ASA GRAY.

Sometimes practice and science seem to be at variance, but after a while they make it up and come to a good understanding. Practice has always said that vegetable mold was a good thing to have in the soil, and that somehow or other plants obtain a great deal of nitrogenous nourishment from it. The proof of it was in the crops. The gardener thought the same, and his pot plants gave convincing evidence of it. He has gone on, saving his leaf-mold, and gathering it where he could, and putting his plants in it all the same, while the chemists were proving to their satisfaction that humus did not amount to much, and even have "seemed to prove that a fertile garden soil has little, if any, more power than so much sand to supply plants with nitrogen." They could not find that the combined nitrogen ever got into the form of ammonia or nitrates. At last it has occurred to one of the chemists, of a practical turn of mind, to test the matter by growing plants in pots, in the gardener's way, supplying them with different quantities of vegetable mold, and withholding it from others of the same sorts, and then chemically analizing the plant to see what it had got. This has been done by Prof. Storer, and a full account of the result will be found in the last (third) part of the Bulletin of the Bussey Institution. It comes out clear that plants do get a deal of nitrogenous food from vegetable mold, just as the practical people thought; although how it comes about still puzzles the chemists. An important paper by Mr. Armsby, of the Sheffield School, discussed last summer at the Hartford meeting of the American Association, comes to the same upshot, finds the gain unequivocal, but yet cannot trace it into the form either of nitric acid or ammonia. Of course, vegetable mold will not do everything, and good farming can be carried on without it, when artificial fertilizers can be had, and its powers may sometimes be greatly enhanced by the proper additions. But vegetable mold, especially in cool climates, where it most accumulates, and where also it is more useful than in warm climates, is a store that nature has been an immense while in gathering, and which it costs nothing to use. Now, after hearing it depreciated by the chemists of late years, it is pleasant to see one of them come to the conclusion: "There can be little doubt that, for the present support of agricultural crops, the vast stores of vegetable mold that have accumulated in the soil through the decay of many generations of plants, constitute a more abundant and more important source of nitrogenized plant-food than any other."

The Arizona Quail—Gambel's Partridge.

There are three plumed quails, or partridges as some call them, in our territory between the Pacific and the high table lands of Western Texas: the Mountain Quail of California, which has a crest of two slender feathers pointing backwards, (*Oreortyx*); the Valley Quail of Southern California, and the Arizona Quail; the last two have a crest of several feathers, curved forward, and belong to a different genus, *Lophortyx*. The Arizona species having been discovered in 1841, by Dr. Gambel, it is named in his honor *L. Gambeli*. The first introduction of these birds into the collection of the Zoölogical Society, London, some two years ago, made a great sensation among naturalists, and they were very carefully figured by the Field, in an engraving, a portion of which we use. The bird is about the bulk of the common quail of the eastern states, but is longer. The male has the chin and throat jet-black, bordered with a sharp white line; there is along the sides of the crown

ARIZONA QUAIL, OR GAMBEL'S PARTRIDGE.—(*Lophortyx Gambeli.*)

a white line, which is bordered above with black; the crown above this line is of a fine chestnut color; the general color of the upper parts of the bird, is a pure clear ash; the edging of the inner quills, white; the breast like the back, the under parts whitish, with a large pure black spot in the middle of the belly; the sides rich purplish chestnut, with sharp white stripes. The crest is of a glossy jet-black, averaging an inch and a half in length, and sometimes reaching two inches, varying in the number of its feathers, but five or six is the average; these all arise from a single point, just behind the white line of the crown, the plume or web of the feather being folded back, so that the shaft of the feather forms the forward edge; each feather is folded upon the one behind it, and the whole crest curved gracefully forward. The female has a shorter crest, rarely over an inch long, lacks the very distinct head markings of the male, and is without the black spot upon the belly. Its common note is a sort of bell-like "chink," though Dr. Elliott Coues, whose description we have condensed, says it has at breeding-time a "song," which he compares to that of a consumptive crow, weary of life. This bird is found throughout Arizona and New Mexico, in great abundance, and is regarded by sportsmen as more difficult to shoot upon the wing than the common quail, as when once flushed the flock scatters in all directions. Its flesh is of the most delicious quality. The writer has seen this bird in that most dreary and desolate country, now by the Gadsden purchase a part of the territory of Arizona, abundant and plump in places so arid, that scarcely any other animals than "horned frogs" were to be seen, and where vegetation was so scanty, that it could not be very choice in its food; they are said, however, to be still more abundant in the thickets of creek bottoms, in the northern part of the territory. This quail, while not a brilliant, is an exceedingly beautiful bird, and of a remarkably graceful carriage; the plume is sometimes bent forward over the eyes and bill, or allowed to fall back upon the neck; but when the bird is in motion, marching proudly at the head of its flock, it is carried erect, as if the wearer were conscious of the air of dignity it imparted. Dr. Coues, who has investigated the habits of this bird more closely than any other naturalist has done, says that its food is very variable, comprising the seeds of grasses and small plants, berries, the buds of willows, and various insects. He states that the largest number he ever saw in a flock, was 15 or 20. The writer's servant, while crossing that desert region, was a green young Irishman, who carried as his weapon a common army musket. Carrol put into this an unmeasured quantity of both powder and shot; when this arm was fired, Carroll knew it, if there was no other result; on those desert plains a flock of these quails, when alarmed, would run to the shelter of some low bush, and there squat; happening to be near when Carroll had for once made a successful shot, we helped pick up the results of the slaughter, and there were 18 birds. Whether Carroll had killed all of a large flock, or got two flocks in range, we do not know, but remember that having had no "fresh mess" for a long time, none of the party felt like chiding the caterer for "pot-shooting," or getting his game in an unsportsman-like manner.

Palms as Decorative Plants.

The whole habit of palm trees is so striking, and the foliage, especially of those with the fan-shaped leaves, so unlike that of other plants, that we do not wonder that the wealthy build costly glass houses in which these exotics may grow, and where their emphatically tropical beauty may be enjoyed. Until within a few years only the very wealthy could ever hope to possess a living palm, but now we know that there are a few which are within the reach of those of moderate means. The family of palms is essentially a tropical one, but a few species are found some 44° north of the equator, and others nearly as far south of it. The latitude at which a plant grows naturally does not indicate its extreme limit of hardiness. Nor can we predict what the behavior of a plant will be when removed from one side of a continent or ocean to a point in the same latitude upon the other side. Were degrees of latitude only to be considered, we might at once transfer the palms of Northern Asia to our gardens, and give them no more care than we do the Ailanthus from the same region. But there are no palms that are quite hardy in our Northern States, and we can only use them for decorative purposes, as we do the Agave or American Aloe, the Oleander, Orange, and Lemon. And are they worth the trouble? —How often do we see a court-yard to an expensive city house cut up in fancy flower beds which, after all that can be done, appear only trivial; in such a place a bit of turf, with a fine palm or two, would lend an air of dignity and stability in keeping with the architecture. So in larger gardens, if the sub-tropical style be adopted, all the other beautiful forms of foliage could lead up to and culminate in the palm; or it may be placed where the spectator may come upon it suddenly, and admire its tropical aspect in contrast with the peculiarly northern forms of conifers. Not the least merit of the hardier palms is their longevity. We have a great regard for what we have before called "family plants,"—specimens which have been so long in possession, that they seem a part of the family, and which children look back to as among the objects of their earliest recollection, and in time show to their children with pride if not affection. One plant like this is worth a greenhouse full of transient showy things. But the first questions we shall be asked are, which are the best palms for garden purposes, and how can we get them? The kinds that have been most thoroughly tested as to hardiness, are the Asiatic species of *Chamærops*—*C. excelsa*, of Nepal, and *C. Fortunei* of the north of China, which is known as the Chusan Palm; these so nearly resemble each other, that some doubt if they are really different; both have been found hardy in parts of England, where they are left out all winter, and also in Paris. In our northern states they will need to be housed in winter; in houses where there is a hall sufficiently large, they would make grand decorative plants for such a place. A number of florists now offer these plants for sale; small ones at low prices, but for show specimens a corresponding sum must be paid. We were pleased to receive, a short time ago, a photograph of a fine specimen of *Chamærops excelsa* from Mr. Charles H. Hovey, which, with its mate, we had more than once admired at the grounds of Hovey & Co., Cambridgeport, Mass.; the accompanying engraving was prepared from the photograph; we received at the same time the following notes on

THE INDIA PALM (*Chamærops excelsa*) IN FRUIT.

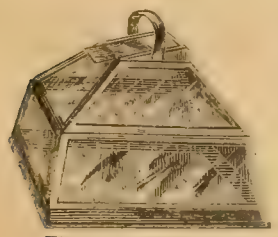


Fig. 1.—HAND-GLASS.

Fig. 3.—PROPAGATING CASE, OR PIT.

Chamærops Excelsa.

BY CHARLES H. HOVEY, CAMBRIDGEPORT, MASS.

In a December number of "The Garden," (London), I noticed an article on *Chamærops excelsa*, or the Male Hardy Palm. We have two fine specimens of this palm, 15 ft. high, with a breadth of head of 12 ft. In May, 1873, one of them flowered for the first time, and was found to be a male. The next year, May, 1874, both flowered, the other one fortunately proving to be a female, and by careful fertilization, we have succeeded in getting a fine crop of seed. The photograph sent shows the palm in full fruit. The one-seeded berries, at this date, (Jan. 18th,) are fully ripe, and of a bright blue color, which, in contrast with the yellow fruit-stalks, and dark green foliage, form a magnificent object. This will prove one of the best varieties of palms for general growing, standing a cold of many degrees below the freezing point, and requiring only the protection of an ordinary cellar or even barn in winter. In England it is entirely hardy, and will undoubtedly prove so in this country south of New York. At the present size of our two specimens, the difference between the male and female, as mentioned in "The Garden," is not apparent; the trunks are of the same size, and their style of growth is similar. When in blossom, the flowers of the male are more dense and numerous than those of the female; they are of a pale yellow or straw color, and look like immense tassels. We hope to see this palm more generally grown.

Hand-Glasses and Other Horticultural Helps.

That which first strikes an Englishman in visiting our gardens, is the small amount of glass in use; we do not especially refer to greenhouses, though we have comparatively few of those, but to smaller structures, from permanent pits and movable frames, down to hand-lights of all kinds, and the simple bell-glass. From the difference in climate, glass is not so much a necessity to successful gardening with us, as it is abroad, but there is no doubt that we might profitably make a much more general use of it than we now do. There are many plants, natives of cool and moist climates, that we rarely have in any perfection, because the sun becomes so hot as to entirely check their growth long before they have fully developed; while this difficulty is more than offset, in the long run, by the greater luxuriance in the growth of all

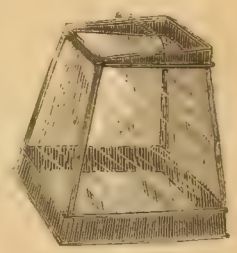


Fig. 2.—HAND-GLASS.

plants of tropical origin, we naturally wish to be successful with both kinds. The cauliflower is an example among vegetables of the plants of cooler countries; early cauliflowers are rarely seen in perfection in ordinary gardens, and even professional gardeners find them an uncertain crop. With this, everything possible should be done to forward it, so that its growth may be made before the hot and dry days of June. A great help in this, would be a portable glass to cover each plant, or one that would include three plants. In Europe hand-glasses are as much a part of the gardener's outfit, as hoes, and these, where there is much less need for hastening the growth, are used for cauliflowers, lettuce, and other early crops. The immense quantity of lettuce taken to the Paris markets, is of an excellence and tenderness rarely seen with us, and is almost entirely raised under bell-glasses, or *cloches*, with which acres are covered around Paris, a single gardener often having some thousands of them. Hand-glasses would no doubt be used to a large extent by our amateurs and gardeners, were they to be readily obtained at a moderate price. Sometimes we see a substitute used, in the form of a small frame, large enough for a single pane of glass at the top, and hand-glasses of various styles, with lights set in lead and other frames, are now and then offered. The need of glasses, not only for forwarding early plants, but for striking cuttings, and other garden uses, is so great, that we are sure that some one will at length hit upon just the thing needed, and produce it at a price which will allow of its general use. Hence, we welcome every attempt towards this desired end, and were very glad to see some specimens of the work of Messrs. Musgrove & Son, 348 and 350 West 41st St., N. Y. These gentlemen, who are large manufacturers of tin and other metal wares, have recently given attention to horticultural appliances of various kinds, including hand-glasses. They have sent us two forms of glasses, the one shown in fig. 1, being 18x18 inches on the ground, and 15 inches high; the other, fig. 2, covers a space 14x14, and is of the same hight; they have heavy zinc frames, and so arranged that no putty or paint is required to hold the glass. Evidently much thought has been given to produce an article thoroughly adapted to its uses, as well as excellent in its workmanship. The many uses these may be put to, will at once occur to every one who works in the garden, and we can say that the articles themselves are more suggestive than the engravings. We are not informed of the price of these hand-glasses, but are sure that should there be a demand for them, the manufacturing facilities of Messrs. Musgrove & Son, are such as to enable them to produce them at the lowest possible cost. In comparing the cost of these with that of the French gardener's *cloche*, which is a simple bell of glass, it must be borne in mind that these, with any decent care, will last a life-time, and that ordinary accidents will only require a pane or two to be renewed, while an unlucky blow or a fall, puts an end to the *cloche*. We may add that the makers of these hand-glasses, have other useful horticultural wares; their fern-case is much more sensible than those of greater pretentions, and more costly materials; they make also a very neat affair of zinc, handsomely decorated, for a window box; the growing of plants in such boxes, is much more satisfactory than in pots, and the custom is increasing. Besides these they make a propagating case or pit, mentioned in another article; they have also the most approved styles of watering pots, and ornamented metal flower-pots, in which to set the common pots, containing plants, for room decoration.

Lancashire Straw Mats or Screens—Early Potatoes.

Any one who has experienced in the garden the convenience of a supply of straw mats, will not care to do without them. Primarily intended for covering the glass of hot-beds and frames to retain heat, they are found useful for many other purposes; does a lot of transplanted seedlings need shading, or does a sudden frost threaten tender plants that have not been housed, in these as in various other emergencies, a straw mat and a few sticks are a ready help. They are light, easily handled, and if stored away *dry* will last for a long time. There are various methods of making these mats, but in all they result in a mat of small bundles of straw an inch or more thick, held parallel to one another by strong cords, the cord being the warp and the straw the woof of the fabric. A recent number of "The Garden," (Eng.), contains an article by a correspondent in Lancashire, from a locality famous for its early potatoes, which are forwarded by the aid of a frame covered with straw mats. As the method of making the mats is different from any we have before seen described, we condense the account and give the illustrations. In the first place there is made a frame (fig. 1) of the desired size, in this case 6x4 feet; this is double, and hinged at the back, (fig. 1, *a*), like a large book-cover, and furnished in front, (fig. 1, *b*), with bolts or hooks. The long pieces, back and front, are of oak, 6 x 2½ inches, and the end pieces, as well as two between, of oak or ash are 1 inch thick; these are let in to the side pieces, and there will thus be a space between them, when the two halves are closed, of 3 inches to contain the material of the mat or screen. Two horses are provided like those in fig. 2, at the end of which is a short post firmly driven into the ground. The frame is laid upon the horses, and one-half turned up and fastened to the posts, (fig. 2), when it is ready to receive the material. In the first place, there is laid on a layer of brush, taking care to select durable kinds, such as hazel, oak, etc.; then a layer of long wheat straw an inch thick, keeping it even and the ends well filled; then more brush, putting the straighter pieces near the sides, and three long straight pieces crosswise; then another inch of straw, and finally a layer of brush similar to that first put down. The upright part of the frame is now brought down and bolted to the other, which will require some pressure; the whole is turned up on edge as in fig. 3, to be sewed. Two needles made of oak, a foot long, and in shape like that in fig. 4, and tarred twine being provided, a man at each side of the frame does the sewing, exchanging needles, and passing them from side to side, as at *e*, fig. 3, and forming a stitch like fig. 5. The sewing is done in 3 or 5 places, and the ends of the brush and straw trimmed even with the frame. The frame is then opened and the completed screen, fig. 6, is taken out. As these are made for an especial purpose, they are screens rather than mats, the brush being added for the purpose of rendering them stiff and firm; but it is evident that the flexible mat can be made in this manner, and, though we have not tried it, with apparently greater facility than in any method we have seen followed. Screens of this kind would be very useful as well as mats, though less easily handled; they are sufficiently stiff to be set up against one another roof-wise to protect plants in rows, or they may be set upon bricks or other supports to shade or otherwise protect small plants. As the method in which the Lancashire cottagers forward their potatoes by the aid of these screens, may afford useful hints to some, we give it in brief. A sheltered spot is chosen, with a warm exposure, and pits of turf are constructed like that in fig. 7. These are built up of any sods that can be procured, and have walls a foot thick and a foot high, back and front, and 4 feet high at the gable ends. A light ridge-pole runs from the top of one gable to the other, supported by uprights *a*, *a*, as needed. Another pole, *b*, or even a strong twine, is placed parallel with the ridge-pole, midway between that and the sides. The soil of the pit is highly manured. The potatoes are started in some out-building, or in boxes of earth in the house, taking care to exclude the light, as the shoots should not be hard or green. Planting is done there the middle of February, the potatoes being cut into sets, each with a good sprout about 6 inches long. Holes are made all over the bed 9 inches apart each way, with a dibble, and deep enough to cover the shoots half an inch. The screens are first placed on the back of the pit, and then on the front, taking care to make a good lap. The after treatment consists in taking off the front screens every sunny day and covering early to retain the heat. Great care is taken to catch all the sun's heat possible, and not to allow the earth of the pit to cool by an hour's needless exposure. The one who by the best management takes the first hamper of potatoes to market, is the local hero, and is rewarded with ribbons as well as a good price. This is one of the simplest methods of forwarding plants, and need not be confined to potatoes. There is much about it to commend itself to those who think they cannot afford glass or frames, as scarcely anything is required but what the rudest farm can supply.

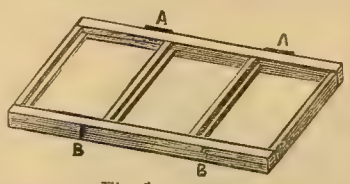


Fig. 1.—FRAME.

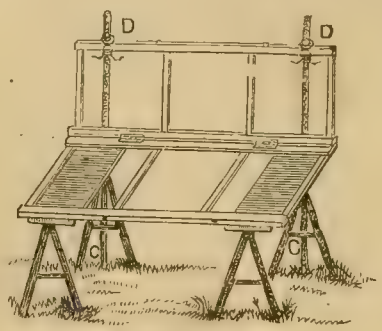


Fig. 2.—FRAME READY TO FILL.

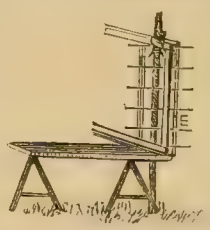


Fig. 3.—SEWING.

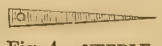


Fig. 4.—NEEDLE.

Fig. 5.—STITCH.

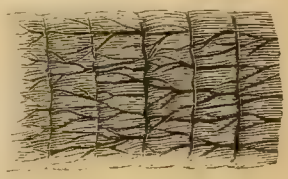


Fig. 6.—SCREEN.

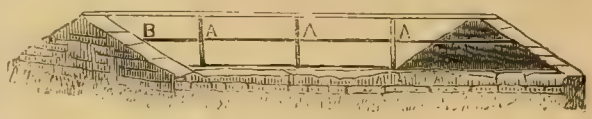


Fig. 7.—PIT BUILT OF TURF.

Failures in Market Gardens—Too much Manure.

BY PETER HENDERSON.

Some of my neighboring market-gardeners are beginning to say that their lands have been so long and so heavily manured that they now fail to get the crops they did in former years, when the grounds that have been now continuously cultivated for a quarter of a century, were but recently broken up from the meadow, or diverted from the primitive culture they received when part of a farm. Then the soil was in the condition to receive large quantities of rich food, manure, and a large and healthy development of almost everything planted was the result. Of late years, though we still have fine crops, we find our radishes and onions becoming more wormy, that cabbages and cauliflowers occasionally get lousy, and that celery, one of our great staples, will now and then "burn" or "rust" in a way unknown twenty years ago, while spinach fails entirely. The market-gardeners are in a dilemma; the lands are now too limited, and too valuable, many of them being rented for $150

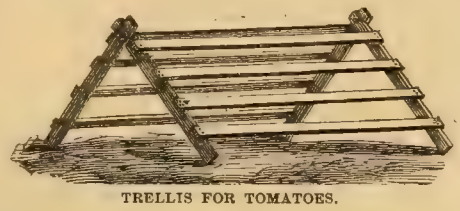
per acre yearly, without a lease, to be allowed to rest, and to withhold the heavy manuring would be fatal, and so they go on, year after year, gorged with 75 tons of manure per acre, annually. Now and then a gardener has the courage to deny himself the "second crop" of celery, and after his spring crop of beets, onions, or cabbage, sows his land either with corn, rye, grass, or clover, to to be plowed under in fall. This is only a partial relief, a few months growth of such crops is not sufficient to make "virgin soil" out of the overfed market garden, though it is found that even this partial rest is sufficient to make the succeeding early crop enough better to compensate for the loss of the second, or celery crop, of the previous year. The market-gardeners of Long Island, though much more distant from market, have larger areas under cultivation. While the average Jersey market-gardener cultivates about 10 acres, the Long Islander may have 50 acres; the nearness to New York gives the Jerseyman the advantage in transporting his products, and in getting his manure cheaper, but as an offset to this, the Long Islander has it in his favor that he can rotate his crops at will. Mr. A. Van Sicklen, of Jamaica, L. I., one of the most successful market-gardeners of that district, cultivates some 50 acres, and makes it a rule that about 10 acres of the 50 shall be so arranged that it will be broken up fresh from sod every fall. His crops of nearly every article cultivated will compare favorably with those of our best Jersey gardeners, yet I much doubt if he applies half the quantity of manure they use; besides, his abundance of land enables him to plant wider, so that everything is cultivated by the horse, while in New Jersey, from the necessity of our close planting, we can cultivate by hand hoes only. These are by no means so good as horse implements, and entail three times the expense for labor. Everything considered, the normal condition of soil being equal, I I think that market-gardening can be more profitably followed on 50 acres of land on Long Island, 10 miles from New York City, than on 10 acres in New Jersey, two miles from the city, providing that the rental is the same for each plot.

A Propagating Case or Forcing Pit.

To the real lover of plants nothing is more interesting than the propagation of them by cuttings, and a single plant raised by one's own hands, is worth more than a dozen from those of the florist. Many plants strike root so readily, that no special appliances are needed to raise them from cuttings, while others form their roots very slowly, or not at all, unless they can be given "bottom heat." By bottom heat, in garden language, is implied that the soil in which the roots, or the part of the cutting on which roots are to be formed, shall be sensibly hotter than the air above it. We have this condition of things in the hot-bed, where the manure is the source of heat, and later in the season in the open ground. After the sun's rays have fallen upon the soil, and it receives more heat during the day than it loses at night, we then have it in good condition for the plants. The florists, who turn out their plants by thousands upon thousands, make use of bottom heat for most plants, as they can multiply those things which do not absolutely require it, more rapidly with it than without it. In their propagating houses, the space below the benches, where the water pipes are, is enclosed; this makes a sort of hot-air closet, the temperature of which can be regulated, and above this is the bench of sand, in which the cuttings are placed. For the great majority of plants, they endeavor to have the temperature of 65°, and that of the air in the house at 50°, as near as may be, and though the temperature may vary, they endeavor to keep up this difference of 15° between the heat of the sand and that of the house. There have been several small pits contrived for the use of amateurs, who wished to use bottom heat, which was supplied by a lamp. These have either been so small as to be trivial and useless, or so large as to be clumsy and in the way. The Waltonian case, taking up nearly as much room as a bureau, has been used by many, notwithstanding its expense. We have seen nothing of this kind that seemed really practical, until the case or portable forcing pit, made by Musgrove & Son, (whose other horticultural wares are noticed elsewhere) was brought to our notice. The engraving (fig. 3, given on page 143), shows only the upper or frame portion, which may be used in the open ground, as a large hand-light or small cold-frame. As a propagating case, this is set upon a zinc base, which contains a reservoir to hold water, and a place to set flower pots, or to put sand for cuttings. A lamp, burning kerosene, is the source of heat; and when the proper temperature is obtained, a very slight flame will continue it. Proper ventilation at top and sides, is provided for, and the whole is made in a workman-like manner, and with evident knowledge of the requirments of such a case. We have set one of these cases in operation in the window of our "den," and shall watch its performance with great interest, as a really useful thing of the kind, is just the one thing that amateurs have long wanted. The usefulness of a case or pit of this kind, is not confined to striking cuttings; there are many tropical seeds that can not be started without extra heat; and it often does wonders with a flagging ill-conditional plant, to prune it and give it a little bottom heat.

Do You Train Your Tomatoes?

Of course no gardener would ever think of trellising an acre of tomatoes, but we do not know of any one little thing that pays better in private gardens than that of giving the tomato vines some kind of a support. It makes but little practical difference what particular support is used, anything that will keep the vines from sprawling out of bounds and looking slovenly, that will keep the plant up, where one can see how to trim out superfluous growth is a great comfort. Besides these advantages, the fruit is less liable to rot, is in sight where malformed specimens can be cut out, and is always clean. Another consideration is the greater ease in "worming" or killing the voracious green caterpillar; indeed if a trellis of some kind is once used, one will always be used thereafter. If one will look back through our volumes he will find various devices, from three hoops and three stakes to hold them up, to more elaborate frameworks. Our present object is to remind the reader to have something in readiness. Set the trellis be-



TRELLIS FOR TOMATOES.

fore the plants are put out, and begin to train to it early. Just here we would remind those who like to amuse themselves in the garden, that a tomato vine with a good bit of manure at its roots, and trained against a barn, shed, or other building, by means of loops of strong cloth and tacks, will make a display that will astonish those who have never seen a tomato thus treated, not only in the quantity of fruit, but the exceeding beauty of the whole plant. Here is an engraving of an easily-made, strong and efficient trellis, from a sketch sent a long time ago by F. M. Bugbee, Ohio, which will be an aid to those who have not the back volumes to refer to.

PASSION-FLOWERS.—The cultivators and fanciers of these most ornamental and easy-grown tender climbers will find a useful help and guide in "*A classified list of all the species of Passiflora cultivated in European Gardens, with references to the works in which they are figured,*" just published by Dr. Masters. It is in the last part of the Journal of the Royal Horticultural Society of London, and is also separately issued as a pamphlet of 25 pages, 8vo. We miss from the list "*Passiflora acerifolia,*" our favorite species to show the visible movement of tendrils, particularly their sweeping movement. But, on looking into the matter, we find that the plant in cultivation and in the English catalogues under this name is not *P. acerifolia* at all, but *P. sicyoides.* Curiously enough, the *Sicyos*-like Passion-flower and the *Sicyos* agree in having this wonderful activity of the tendrils.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Will the Coming Woman Fry?

There have been a great many conundrums put with regard to the "coming woman," as well as the "coming man." As to the one proposed at the head of this article, we think that the "coming woman" *will* fry. We expect that the "coming woman" will be sensible, at least, and if she cooks she will, being sensible, fry. "What! after all that Faith Rochester has said against frying, do you—editor of the household—say that frying is 'sensible,' or even tolerable?"—Patience, good madam. We endorse all that our valued contributor, Faith, has said, and would condemn in even stronger language than she has used the frying of food—and yet say that the "coming woman, if sensible, will fry." The frying-pan shall be abolished with its attendant indigestion—and yet she shall fry. To explain—there is frying and frying, and the frying that 999—including our friend Faith—in 1,000, talk about, is not the frying that we mean, and which will be the frying of the sensible coming woman. Let us look at it! Fried mutton chops, for instance. The frying-pan is put on with some fat; the fat melts and is perhaps half an inch deep over the bottom of the pan—often less. When the fat is thought to be hot enough, the chops are put in; immediately the fat is cooled, and there is not enough of it to cover the chops; after a while, as the fat heats, there commences a sizzling, and half boiling, half stewing, but no frying goes on; the juices of the meat stew out into the fat, and a corresponding amount of fat stews into the meat. The whole sizzle together, turning when the lower side is in danger of burning, until the cook thinks the chops are done, the meat is put upon a platter, and the fat in which it was fried too often poured over, and it is thus sent to the table. This is the too general way of fried meat, and is thoroughly unfit for the average stomach. There are some few who can tolerate much fat and feel no inconvenience, but unless for very robust, hard-working men, such meat is absolutely injurious. Now, come to the kitchen of the writer. The frying-pan is replaced by an enamelled kettle with sides about 6 inches deep; the fat, when melted, is about 3 inches deep, and is allowed to heat; the chops have had all superfluous fat cut away, and are dipped in a beaten egg, and then covered, either with "cracker meal" or bread-crumbs, dried in the oven and rolled fine. Then, when the fat is hot enough to make a crumb of bread *brown and crisp* in four or five seconds, the chops are put in, with a slight interval between them, so that the fat can recover from its cooling; as soon as the chop strikes the hot fat, the surface is at once cooked, no juice of meat can get out and no particle of fat can get in, for the surface is so seared and closed that this is an impossibility; and within this closed surface the meat remains as juicy as when the chops are broiled. There being sufficient fat, the chops can be moved about, and one side need never be done more than the other by resting on the bottom. When taken from the hot fat, each being allowed to drain a few seconds, the chops may be served upon a napkin, if you choose, and when eaten there is not the least trace of grease to be discovered, and there is none to be tasted. Now, we claim that a mutton chop fried in this way, is as entirely unobjectionable upon the score of health as the ordinary fried mutton chop is reprehensible. Let us take another common breakfast-dish, fried potatoes. The different

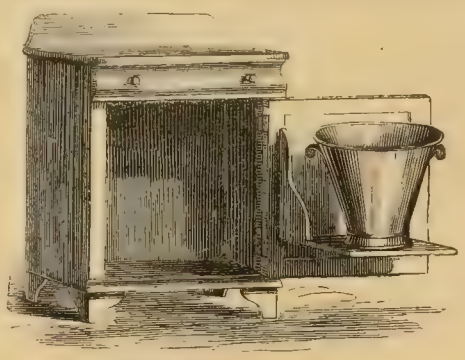
things that are served throughout the land under this name are truly wonderful. One of the commonest ways is to fry potatoes that were boiled the day before, and they may be done very nicely, but not in Bridget's usual way; Biddy slices the potatoes into the frying-pan, puts a lump of drippings or lard with them, sets the pan on the stove, and goes about something else. The fat melts and soaks into the slices at the bottom; as the heat increases, these begin to brown, and then if Biddy happens to think of it, she gives them a stir; perhaps another later; when the potatoes are on the table, a part will be very brown or even burned on one side, white on the other and very greasy, while the rest are well warmed through, and if there was fat enough left to do it, their surfaces greased. Potatoes are very hard to spoil—provided they were good to start with, but these come as near being unfit to eat as a potato can be made. Now, let us take the same boiled potatoes from yesterday's dinner: slice them, not into a frying-pan, but into a wire basket, like that in the engraving. This can be had for about 50 cents at any furnishing store. Ours is 8½ inches across, 3 inches deep, has a strengthening rim at the top, and a wire bail; it is made of tinned wire, and may be kept almost as bright as silver. The frying-pan is dispensed with, but the kettle of fat is put on as before; when the fat is *right hot*, in goes the basket with a s-k-r-r-r-r. The surfaces of the slices are browned at once, they are all done equally, are taken out at once, drained a few seconds, and dished without a sign of grease. Raw potatoes are treated in the same way; if you wish "Saratoga potatoes," slice raw potatoes very thin, cut the slices into strips, and put them in ice-water; then, when the fat is *hot*, dry the potato slivers in a towel quickly, put them into the wire basket and into the fat while still cold and crisp. We of course do not do this as a general thing, but many ask about Saratoga potatoes, which "may be eaten in white kid-gloves," and we give it in passing. These two examples will, we think, justify us in the statement that frying properly understood is not only a quick and convenient mode of cooking, but its results, while acceptable to the palate, are not of necessity more deleterious in the stomach than other forms of cooking. But understand that by frying we do not mean simmering and sizzling in fat, but the sudden immersion into a *plenty of fat* that is *sufficiently hot*. If these two ends can not be accomplished—then don't fry. "Ah, but plenty of fat, it is all very well for rich people, but *we* can not afford it."—This is a mistake; it simply requires more to start with, but the actual consumption of fat is less. An ordinary family will probably do four kinds of frying, and should have as many stone jars; one for fat to fry meats; one for fish; one for potatoes, and a fourth for fritters, doughnuts, and such like. On a farm, where lard is a home product, it makes no difference whether the lard is used in this way or in small dabs at a time. Always have a plenty of fat, so that the article to be fried need never rest on the bottom of the pan. Have the fat always so hot that the surface of whatever is put into it is cooked, or seared at once; there will then be no soaking of fat. The French cooks call it *siezing*, the moment the thing goes into the fat, that should be hot enough to "sieze" it at once. The wire basket is a great aid in frying properly, as it allows the articles to be all put in and all taken out at the same instant, and nothing can ever come in contact with the bottom of the kettle or pan. We find it of frequent use; living near the sea, where scollops, clams, oysters, smelts, (a very small delicious fish), and many such things, not common in-land, are readily obtained, we find it of frequent use for these; and for balls made of mashed patatoes; those made of meat and potatoes, or whatever is to be fried, that ordinarily may come in contact with the bottom of the pan, this is in frequent use. Innovations are seldom welcomed by those who have always followed "the old way," but we beseech our friends either to improve their methods of frying, or to "reform it altogether," by banishing this manner of cooking.

FRYING BASKET.

A Place for the Slop-Jar.

BY J. HYSLOP, WASHINGTON, D. C.

Even when new, and in all its pride of paint and gilt, the slop-jar is hardly an ornamental piece of furniture in a room used both as a sitting and bedroom, and after a few months' wear, we all know what an unsightly object it becomes. I suffered the sight of an old one in my room for many months, hoping all the time to be able to replace it with one of china, but I found it took a young fortune to get a decent looking one in that material, so I set my inventive faculties at work, to devise a means of hiding my old tin thing, and yet have it as convenient for use as if in full view. The enclosed sketch will show you the result of my labors. The bracket screwed on the edge of the washstand door next the hinges, supports the end of the shelf, and a slat, screwed across the lower part, the side, giving ample support for a jar when full of water. On the outside of the door, at the middle of the lower edge, I fastened a bronze drawer-pull, large enough to admit the toe of a slipper, so that the door, and with it the jar, may be pulled out, if need be, while both hands are occupied with the basin. An incidental advantage of having the jar raised on the shelf, is that there is less spattering in using the the tooth brush; where there was formerly a puddle on the oilcloth when I had finished my toilet, there is now scarcely a drop of water. After nearly a year's use, I find the hinges not at all strained, although of the weakness of those usually found on cabinet work.



ARRANGEMENT OF SLOP-JAR.

Parlor Matches.—"S. M. T." These are at once the most convenient, as well as the most unsafe matches one can use. Still we use them, they are so quick and certain, that the old kinds seem a waste of time, to say nothing about the unpleasantness of sulphur fumes. It should be borne in mind, that as the facility with which we can strike a light is increased, so is the danger increased. With these matches the merest light stroke gives us a light; so a similar stroke made accidentally upon a carelessly dropped match, may cause a conflagration. These matches should be kept as carefully as you would keep gunpowder. Have no matches lying about; in each room where they are to be used, have a metalic match-safe. Excellent ones of cast iron may be had cheaply; elegant ones of bronze, for finer rooms, are also made. But let there be fixed places where matches are to be kept, and insist that they shall be kept nowhere else. Have common matches in the kitchen, and equally well protected. Teach by example, and precept, that they are a great blessing, and a source of great danger. Have them out of reach of children and of rats. Many a building has been burned by a rat gnawing a match. Rats will carry off parlor matches to their holes; perhaps they are tempted to do this by the smell of paraffine, with which their ends are coated, before the explosive mixture is put on. We saw a year or two ago, a quart at least of parlor matches that were taken from a rat's nest, in a country hotel not far from where we live; the rats had gathered these from the bar and other parts of the house, and taken them to their nest, and a single bite at one, or any rough usage, would have set the house on fire, and "the work of an incendiary," would have been the verdict. We have not the least desire to speak ill of these matches, for we use no other, but we think it best that their dangerous possibilities should be known. When every one knows that they are dangerous, then their danger will disappear. In this case, as in others, it is not "folly to be wise." Sometimes, though not often, the matches happen to be of poor wood, and the blow given to strike a light, simply breaks off the match near the end. Don't take another and another until one is found to light, and think no more about it, but hunt for these match ends, lest they be swept up and go with the rubbish. The rubbish heap in winter is often under a shed, until it can be disposed of in spring. Look out that no match ends make a burning on their own account. Occasionally we get a lot of matches which go off with an explosion, and scatter small burning particles. We buy our matches by wholesale, and once had a large lot, in which, owing to carelessness in mixing the compound with which they were tipped, every match was a small torpedo, sometimes throwing minute particles of burning matter for a foot or more. Even with ordinary lots a match will sometimes go with a bang. One of these firy bits, upon the eye, will cause intense pain—we have known it to do so by hitting the face—if not irreparable damage. Therefore never draw a match towards you—always draw it *from you*, and this, in case of an explosion, will incline the particles away from the face. As experienced hunters rarely have an accident with their arms, because they know just what they are capable of doing, so there need be no accidents with matches, if all knew the mischief of which they are capable. The careful housekeeper does not object to have laudanum or arsenic in the house, because she knows just how poisonous they are, and guards them accordingly, so our friend "S. M. T.," need apprehend no danger from parlor matches, if she knows their dangerous points, and guards against accident. By "parlor match" we have reference to no particular manufacture, but refer in a general way to those matches which have no sulphur, and the igniting material of which ignites in a half explosive manner.

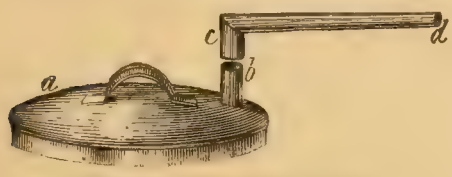
A Carpet-Stretcher.

A very simple and useful Carpet-Stretcher is made by fastening a narrow piece of wood to a broom-handle, or the handle of a hay-rake or fork. A hole is bored in the piece of wood—which is shaped like the head of a hay-rake—rather smaller than the handle. The end of the handle is whittled down to fit the hole, so that it cannot be forced through, and it is then wedged tightly in its place. A few pieces of wire, or shingle nails, filed or ground to a sharp point, are then inserted in the head of the stretcher, projecting so far from the edge that they may take hold of the carpet, but no more. These should be filed or ground smooth, as any sharp or rough corners will cut or break the carpet threads. The front of the head from which the points project should be beveled down to an edge; then very short points only will be needed,

CARPET-STRETCHER.

and the implement will be lighter and neater. The form of the stretcher will be so clearly seen by the engraving, that any smart boy can make one. It will be found handy at house-cleaning time.

STEAM IN KITCHENS. — A friend in Iowa is troubled with steam in the kitchen, but does not go into full particulars as to the cause of it. Supposing there is a cooking stove, and that the



COVER TO A STOVE-POT OR BOILER.

troublesome steam comes from the pots and kettles, we give a diagram showing how 20 or 30 years ago all stove boilers were arranged. The pot-lid *a*, had in it a short pipe, *b*. When this was in use, the pipe, *c*, *d*, was placed on it, the end, *c*, fitting on *b*, while the end, *d*, went into a hole in the pipe. The pipes were furnished with 2 or 3 holes at different hights, to allow the steam pipes to enter, and when not in use, a small iron flap fell down and covered them.

What Shall we Have for Breakfast?

BY AUNT LUCY, TRUMBULL COUNTY, OHIO.

[The various breakfast bills of fare that we have given from time to time, have called out others, one of which is here published. These are interesting to housekeepers as showing how their sisters in different parts of the country manage that important, but usually troublesome meal, the breakfast. The use of cookies, ginger cakes, and other cakes, will strike many as strange, but we have noticed that it is an almost universal custom in some parts of the country. Such lists are always suggestive, and when, as in the present case, they are accompanied by recipes, very useful. ED.]

I here give a list of plain articles for breakfast, for each morning of the week, such an one as any farmer's wife could get any time through fall and winter months.

Sunday.—Codfish cooked in water, add butter, in which work a tablespoonful of flour, and add just before taking up, a teacupful of thin cream. Boiled potatoes, cold baked beans, (from Saturday's dinner), apple sauce, pickled cabbage, ginger cakes, coffee. The ginger cakes are very good made with one cupful of cream, one cupful of molasses, two of flour, a tablespoonful of ginger, one teaspoonful of soda, add salt. Drop on a well greased tin, a small spoonful in a place; bake quick. If the cream is sweet, add a tablespoonful of vinegar to raise it.

Monday.—Cold sliced meat, from Sunday's roast, (cut thin and smooth), fried potatoes, fried or boiled eggs, Graham gems, sauce, tomato pickles, cookies, and coffee.

Tuesday.—Baked potatoes, baked squash, fried pork, (cut in thin slices, soak over night in cold milk and water, then dip in flour before frying, fry slow to a nice brown), corn cakes made with one pint of buttermilk, one pint meal, one egg, teaspoonful soda, salt; bake half an hour. Very good, try it. Apple sauce, ginger cakes, and coffee.

Wednesday.—Beef steak, mashed potatoes, turnips, griddle cakes, (one pint sour milk, one egg, one teaspoonful of soda, make *thin*), maple syrup, pickles, ginger cakes, and coffee.

Thursday.—Warm the meat from yesterday's dinner, baked potatoes, fried mush, with syrup, Graham gems, sauce, pickled beets, cookies, and coffee.

Friday.—Fried ham or sausage, baked potatoes and baked squash, Graham gems, spiced tomatoes, ginger cakes, and coffee.

Saturday.—Cold meat, mashed potatoes, toast, with a soft boiled egg, (break each egg into water to boil, and when done take it up with care), on each piece. Cold cabbage, sauce, cookies, and coffee.

To me there is not so much in what we have, or get, as how we get it. Always set the table neatly, it takes no longer, if you will only accustom yourself to put the knives and forks on regularly, and have a certain place for every dish. Let your food come to the table in neat and suitable dishes; always put the meat on a platter, and potatoes and other vegetables in covered dishes. I have seen the meat on soup plates, and the potatoes and other vegetables on dinner or breakfast plates, and although well cooked, the food to me seemed inferior. It is worth while for the young housekeeper to notice these small matters.

Graham bread is an article of diet which should be found on every table, and I think would be, if our cooks would take more pains to make good Graham bread. Here is a recipe, which, if followed, will insure the same: one pint of *warm*, (not hot), water, and add one teacupful of sponge, or half a cupful of yeast, two tablespoonsful of molasses, (or three of sugar), quarter teaspoonful of soda, stir in the Graham flour till *quite* thick, let it rise, but not *too light*, then add flour until it is as thick as you can well stir it, put it into a well greased sheet-iron, (*not tin*), bread pan, and let rise, but not too much. This flour ferments sooner than the bolted flour, and one cause of poor Graham bread is, that it is left too long, or rises too many times. Do not let it rise but twice before baking. Sometimes I stir it up and put it immediately into the baking-pan, letting it rise only in the loaf. Do not make it stiff enough to knead, or it will be too dry.

Graham Gems.—At our breakfast table we consider Graham gems indispensable. This is our recipe: Two teacupfuls of butter-milk, a little salt, three *even* cupfuls of Graham flour, and one teaspoonful of soda. Stir well and bake in *iron* gem pans, which should be *hot* on the stove before filling; put them into a very hot oven, and bake from 15 to 20 minutes. If you want them of extra quality, take one teacupful of butter-milk, one egg, two teacupfuls of the flour, with soda and salt, as before. Very good gems are made by taking one teacupful of sweet milk or water, one and a half teacupfuls of the flour, half a teaspoonful of soda, one of cream tartar, with a little salt, and a spoonful of sugar; beat well, until it looks smooth.

WHITE ROLLS should be mixed and set to rise the evening before, and made into rolls half an hour before baking in the morning. A pint of warm milk fresh from the cow with salt and half a cup of yeast stirred up quite stiff with flour, and molded until it springs under the touch of the fingers, makes a most delicious, light, short roll.

BOYS & GIRLS' COLUMNS.

April.

Though in the division of the year into seasons, March is put as the first month of spring, most of you, at least you who live in northern countries, think there is little spring-like about March. As we write this in the first week in March, there is over a foot of snow on the ground. It is in April that most of you look for signs of spring—the swelling and the bursting of the buds, the early wild flowers, the peeping of the frogs, the return of the birds, and all that marks the awakening after the long sleep of winter. Do you know why the month was called April?—The ancient Romans called it *Aprilis*, from which our word is made by leaving off the last syllable, and they got *Aprilis* from *aperire*, to open, because this is the month for the buds to open; so we really call this month April because it is the "opening month." Did you ever get sent on some foolish errand on the first day of the month—and then feel vexed when some one said "April fool?" It used to be the custom to observe the first day of the month, by making April-fools, much more than it is now. We are not sorry to see the custom forgotten, as every one does not know how to make harmless fun. Still, should you be "April-fooled", do not get cross over it, but remember that long before the Christian era, the ancient Hindoos, not only children, but old persons, were served in the same way, and that the custom is one so old that the meaning of it, or how it was first begun, have been forgotten for ages. It is much pleasanter to think of April as the bud-opening month, than as that in which people make fools of themselves in trying to fool others.—Don't you think so?

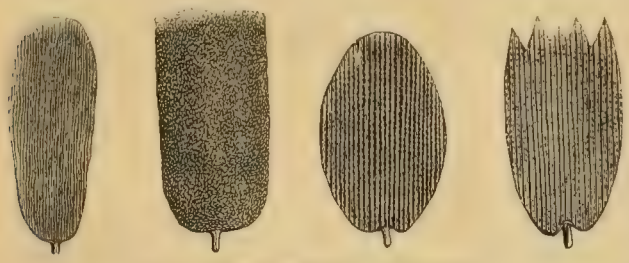
No. 443—The Aviary Puzzle.—In this the different pictures each represent a bird, *i. e.*, gives you a clue to the name of some bird. If a picture of quadrupeds was made in a similar way, the letter M placed upon a picture of a key, would read M-on-key, or monkey, or a picture of a bat, such as boys use in ball-playing, would stand for the animal of that name. With this explanation you will no doubt find amusement in making out what birds are kept in our aviary.

AN AVIARY PUZZLE PICTURE.

Have Butterflies Feathers.

"Henry," of Bergen Co., has heard some one say that the wings of butterflies were covered with small feathers, and wishes to know if this is true.—The statement is much nearer the truth than some things that are told about insects, and if you say *scales* instead of feathers, it will be quite true. No doubt you have noticed, when you have touched the wing of a butterfly, that something like a powder or dust came off upon your fingers. If you have a microscope, or even a strong common magnifying glass, and examine this powder or dust from the butterfly's wing, you will find that each particle is a very pretty scale, like those shown in the engraving, which shows several shapes. They differ in size and shape on different kinds of butterflies, and on the same insect, but are usually wedge-shaped or fan-shaped, often with notches at one end, and a little stem, by which it is fast-

ened to the wing at the other; some of the scales are narrow in proportion to their length, with straight sides, and these look something like a feather in shape, but have no plume or web like a feather, and are properly scales; they are supposed to be really hairs of a peculiar shape. If you examine a piece of the wing with a magnifier, the scales will be seen to over-lap one another very neatly, much as the shingles do upon a roof. You naturally would like to know the size of these scales; we have not just now any at hand that we can measure with the microscope, but some one has said that the wings of a silkworm butterfly, (or rather moth), have upon them over 400,000 of these scales. All the butterflies, the moths of all kinds, the skippers, and some others, from those so small that you would hardly notice them, to the



SCALES FROM DIFFERENT BUTTERFLIES.

great *Cecropia* moth, the wings of which have a spread of six inches, have these scales, and naturalists put all these insects into one sub-order, and call it Lepidoptera, a name that looks hard, but you will have less difficulty in recollecting it if you know it is made from the Greek words *lepis*, a scale, and *pteron*, a wing, and really means the scale-winged insects. The insects belonging to the *Lepidoptera*, are often very beautiful, especially some of the butterflies, with their brilliant and varied colors, but if the wings so brilliantly marked, were to have their scales brushed off, they would loose all their beauty, for the colors are due to these minute, dust-like bodies.

Answers to Puzzle Pictures.—Those who have asked for answers to the puzzle pictures that have been given within a few months, will have found in the March number an answer to the two preceding; the one in that number, "A Farm Scene," represents a farmer, standing with his hands behind his back, looking abroad at his fields; his face is very plainly outlined by the twigs, at the white spot representing a cloud, directly in the middle of the upper part of the picture; his body is not quite so plain as it might have been.

Pyxidanthera and Dogs.

BY MRS. C. L. M., VINELAND, N. J.

Young folks, do not feel alarmed at the long word heading this article, you will find it quite easily pronounced, if you make the trial. What it has to do with dogs, may be more of a puzzle. Let me tell you something about it, then perhaps you will see the reasons. The botany says, Pyxidanthera is a "small, prostrate, and creeping evergreen, etc., growing in New Jersey." But as so few of the little folks who read these stories, live in New Jersey, I will add a trifle in the way of home-made description, for the benefit of those unlikely to make its acquaintance in any other way.

Pyxidanthera resembles the pink Phlox, very common in gardens, and known in most places as "Moss Pink," a low spreading plant, blooming early in spring, forming a dense mat of small closely crowded flowers; it is not, however, near as pretty or choice looking, the flowers are much larger, the petals more flimsy, the buds less striking, the foliage not as fine color, and the whole plant's inferior in appearance to the little Pyxidanthera, Its creeping matting habit, and profusion of flowers, are its strong points of resemblance.

Pyxidanthera (it is not common enough to have another name), comes into bloom with the first breath of spring, its multiplicity of buds responding so promptly to the warm air, that, like the Crocus, it seems not to consult the almanac, but to accept the first warm sunshine as an invitation to unfold its waiting blossoms. The buds just before opening are exquisite. Their deep pink mites of heads, making beautiful contrast with the white flowers. It is often found in patches covering a square foot or more of surface, and growing as it does in the wildest places, it presents one of the most attractive natural productions of the floral kingdom.

Now for the dog part of the story: A friend presented me with a young black-and-tan specimen of caninity, weighing six ounces. Though so small an affair in size, he soon became a great favorite, and the selection of a name, suited to his proportions and prospective perfections, became a matter of grave study. Dot, Pet, Pink, and Carl, with many others, were talked of and passed as unsuitable. Some were not pleasant sounding, and others were a letter or two too long, four being the limit as to number. Application was made to a French scholar for help out of the dilemma, without any satisfactory results. I think you will laugh, but the difficulty was settled by naming him Pyxidanthera. We call him Pyx, "for short," Pixie, for petting, and Dan for reproof. The latter, accompanied by a stamp of the foot, when he misbehaves himself, is impressive and effectual.

Would you believe it? he has grown, despite his long name, until he weighs a pound and three-quarters, and is the jolliest little fellow imaginable. He is also very brave in a small way, catching and killing mice with true terrier ability. To be sure, we have to trap them first, and only give little Pyx the small ones to catch.

I will tell you an incident in regard to Pyx, that may give some of you a new idea in natural history. If it should happen, however, that none of you are as ignorant as I was, then you will have an opportunity of learning how uncomfortable a lack of knowledge in natural laws may make us. I had been but a few days the proprietor of this diminutive terrier, when I took occasion to give him a careful looking over through my spectacles, and discovered, to my great affliction, that the little fellow had no ears! I do not mean that there was no external appendage bearing that name, but that there was no orifice or cavity beneath it.

I have the habit of being easily discouraged, and "meeting trouble half way," so I made some characteristic remarks, to the effect that it was "just my luck," and began to think of having the existence of the unfortunate little puppy curtailed at once. I knew that the eyes would open all right, I had learned that blindness was common to many young animals, but no ears—that was beyond my comprehension, and it was only in consideration of the mother's loneliness, that he was not put out of the way immediately. In a few days, however, in answer to an inquiry if any thing could be done to remedy the defect, a dog-fancier communicated the fact that all young dogs were deaf as well as blind, and that in the course of eighteen or twenty days the difficulty would disappear naturally. It is humiliating sometimes to learn one's ignorance, but in this instance I felt only too happy to be proved an ignoramus.

Aunt Sue's Chats.

ODD LETTERS.—I wish you could see a few of the curious letters I receive; they would furnish you with more amusement than some of the puzzles. A postal-card lies before me now, (from Virginia,) addressed—very properly—to "Aunt Sue, Box 111, P. O., Brooklyn, N. Y.," so that it comes to me very directly; but it begins—"Dear Sir"—(why Dear *Sir* to Aunt Sue?) "Pleas to send me your communications for the puzzle box and list of perticlars and circles &c. add. to John ——." Now, if some of my young friends will be kind enough to enlighten me as to what John wants, I might be tempted to send it to him, if he had had the grace to send me a postage-stamp wherewith to prepay my answer; but he did not, and so I am afraid my good nature will not be equal to the demand upon it. What do you suppose he means by "perticlars and circles"!?

STRANGE PETS.—Maggie asks if "anybody ever did make a pet of a spider."—I never did, Maggie; I have no affection for them, and generally give them a wide berth; although I can not deny that of a summer's evening I have often paused in my walk to watch the skillful weaver at his work; but I have heard that there is in the West Indies a large formidable kind of spider, of which a pet is made by some of the islanders; they respect it as a sacred creature, by no means to be hurt or disturbed; but I rather think that their affection for the "beastie" grows out of the fact that it delivers them from cockroaches, with which, but for him, their houses would be over-run.

POSTAL-CARDS.—F. M. G. You can judge whether "postal-cards are much used" when I tell you that during the first year of their introduction into this country 112,043,500 were sold. They are made at Springfield, and three thousand pounds of paper are consumed daily at the manufactory, to turn out about 700,000 cards.

DUN.—Charlie F. wants to know the origin of this word. In the time of King Henry VIII of England, there was a bailiff by the name of Joe Dunn, who was very successful in collecting doubtful debts. When every other resort had failed with debtors, creditors would threaten to send Dunn after them; until the name became a by-word.

E. S. B.—In "alphabetical arithmetic" letters are used instead of figures; ten different letters for ten different figures. For instance you select the words "black horse" to represent your digits; so B would represent 1, L, 2, A, 3, C, 4, O, 7, and so on. Now construct your sum, substitute letters for figures, and you have a specimen of Alphabetical Arithmetic.

HERBERT F. Y.—No, it is not "humbug" that "large newspapers make good coverlids in winter," they are quite effectual in excluding the cold air, and preserving the warmth of the body in the bed.

The Alarm.

BY MRS. S. A. N.

"Oh! Bridget, don't talk any more about burglars, or you'll make me nervous."

"Well, Miss Mary, Tim was here this afternoon, and he was telling me how they was goin' around murderin' all the women and children, and I can't get it out of my head. I wish master hadn't gone away, or that some of the gentlemen had come up from the village to stay here to-night."

"Well now you go to bed Bridget, and don't let Harry hear you talking about thieves and robbers· where is the boy?"

"He went to bed half an hour ago; but he'd be no use if any of the villains did try to break in."

"Why Bridget, I don't think you need feel uneasy about them; burglars generally make their plans to rob houses where they know they will get the most "plunder," and we haven't got much to steal now; since the sneak-thief ran off with our silver in town, father has had nothing but plated-ware, and I guess the thieves know all about that as well as we do; and I don't think my few bits of jewelry would tempt them. But don't talk about them any more."

"Well, I won't, Miss Mary, but for the life of me, I can't help thinking of the murderin' villains," and Bridget left the room.

This conversation occurred in a neat little residence near the banks of the Hudson River, which Mr. Blakely, Mary's father, had taken for the summer. He was engaged in business in New York, whither he went every morning, returning in the evening to his country house. But this evening he was unavoidably detained in the city, and the remainder of his family, Mary and Harry, with their one servant, Bridget, were left alone for the first time since they left town.

The newspapers had been full of frightful tales of masked burglars, and as the sun went down, and the various sounds of life, heard even in the country, became hushed, all but the night-birds, the frogs, and the crickets, Bridget began to get fidgety, made various excuses to go into the little parlor and say a few words to Miss Mary, who sat at the window which opened on to a piazza, idly watching the deepening shadows, and, if the truth must be told, thinking of a certain Charlie who had gone abroad with his family, and who used to write home twice a week at first, but now it was a whole month since he had written a line.

Bridget had at length gone to her room, and Mary went round to all the windows and doors, to see that they were securely fastened. A little piece of mortar fell down the chimney, which made her start and turn pale, then she laughed, but wished Bridget wouldn't talk so much about burglars; and hurrying to her room she shut the door and bolted herself in. She would fain have shut and fastened the window, but being a warm night in July, that wasn't to be thought of. And what a lovely night it was, except just where she ought to have seen the comet, and of course it was cloudy there. So thinking of burglars, and Charlie, and the comet, she undressed slowly, and it was pretty late before sleep came and kissed her eyelids.

. . . . . .

How long she had been asleep she didn't know, when she started up in alarm at an unusual noise outside; something or somebody was certainly stirring on the piazza. Her heart beat violently, and the perspiration stood in beads on her forehead. Notwithstanding the conversation of the evening before, she had provided herself with no weapon of any kind. She stole out of bed in fear and trembling, crept to the window, and peered out into the darkness. Her window was just round the corner from the piazza, but Bridget's room commanded a view of it; did she dare to cross the hall? Should she call Bridget or Harry? She listened again at the window, yes, she was sure she heard some one moving by the parlor window! Hastily slipping a shawl around her she flew to Bridget's room. Bridget thought her time had come! and sitting up in bed began to shriek "murder," when Mary hastily placing her hand over her mouth, whispered earnestly, "It is I, Bridget,—Mary—hush-sh-h, I want to tell you something, don't make a noise or you will wake Harry."

"Oh! laws, Miss Mary, how you did scare me! I thought certainly——"

"Sh-h, Bridget, don't you be frightened because I am, but I really do think some one is trying to get in at the

parlor window. We can look on to the piazza from your window; will you come with me and let us look?"

Bridget was rather flattered at the idea of Mary coming to her for protection, so she cautiously stepped to the window, and together they peeped out. Yes, there was something black there—it was a man! but what was he doing? Just then they heard a noise behind them, and Mary, uttering a suppressed shriek, would certainly have fainted for the first time in her life, if Harry, who had come into the room in his bare feet, hadn't spoken on the instant.

Harry was about twelve years old, a good-natured frolicsome chap, not much afraid of anything: and when he heard what was the matter, in answer to his question of what in the world they were up to, he laughed at them and guessed they'd been scared by an owl.

"Sh-h, Harry," whispered Mary, "come here and you can see him. What is he doing now, Bridget? he seems to be sitting down——"

"Why it is a fellow!" said Harry, "where's father's pistol?"

"Oh! don't, Harry, maybe he'll go away."

"Well I'll scare him, any way!" said Harry, "I'll go and get my toot-horn and blow it at him."

"For the land sake child," said Bridget in a loud whisper, "what good will that do!"

But Harry had run off, and Mary, feeling a little more courageous in company, said, "let him get it, Bridget, perhaps the man may think it is a lunatic asylum and go off."

Just then Harry came to the window, and blew a loud blast on one of those fearful trumpets that six-year-old boys love so well.

Bridget and Mary had been keeping their eyes on the man, who hastily rose to his feet when he heard the horn, and they could hear him muttering for a few minutes. Then he stepped to the door and rang the bell.

Harry put his head out of the window and called out, "Hullo! what's wanting?"

"Is anything the matter with you's, inside there?"

"No, we are just amusing ourselves a little: what do you want?"

"Faith then I came in to take a little quiet nap on your pee-azy, but its little sleep one ud get with fish-horns tooting round in the middle of the night, and women a schramin', so I'll bid you good night and go on to the next town, where I was going when I came in here to rest me awhile," and away he went muttering, "mighty quare doin's in there, any way; it isn't a right house at all!"

Harry only blew the horn once, but that once astonished many of the neighbors who were within hearing distance, and when the story of that night's adventure was told in the village, they were glad to solve the mystery of that one blast at midnight, for some of the old ladies were seriously frightened at what they were sure was some mysterious warning.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. Strays.
2. Pursued.
3. Deserve.
4. Claimed.
5. Praised.
6. Earnest.
7. Paternal.
8. Umbrella.
9. Catalogue.
10. Customer.

(You puzzlers need not think that the above anagrams are "answers" in the wrong place: each one word resolves itself into another perfect word.—A. S.)

NUMERICAL ENIGMA.

I am composed of 21 letters:
My 7, 6, 16, 17, 13, is an imaginary being.
My 2, 8, 13, 14, 2, 19, 15, 21, is a girl's name.
My 18, 3, 5, 10, is a vessel.
My 11, 19, 12, 20, 21, 3, is a relative.
My 4, 6, 9, 1, is a sort of handle.
My whole is a well-known proverb.
HON. O. R. ABLE.

DIAMOND PUZZLE.

The center letters, horizontal and perpendicular, name an old friend.

1. Found in the earth. 2. A shrub. 3. A musical instrument. 4. A daily record. 5. A game for one. 6. A household article. 7. Connected with the family circle. 8. Joining together. 9. Dwellings. 10. Sidewalk. 11. An article of clothing. 12. A sprite. 13. Found in every shell. W. L. EDWARDS, JR.

CROSS WORD.

My first is in morning but not in sun,
My next is in cannon but not in gun,
My third is in hen but not in duck,
My fourth is in good but not in luck,
My fifth is in dark but not in light,
My sixth is in nearly but not in quite,
My whole comes only once a week,
I'm sure its name I need not speak. L. FISHER.

A PARTY OF GIRLS.

1. Let him in, Niece Rachel.—2. She lent me her new book.—3. I bought these vases in New York.—4. Hark, Tom! A bell is ringing.—5. Arthur, that tie is quite becoming.—6. Sydney Carr, I expelled your brother from school for disobedience.—7. Fred, I think you grow tall.—8. Hal, I certainly told you to learn your lesson.—9. Charlie is fond of music or a good book.—10. I let them make some cake.—11. That dog is surely going mad, Georgie.—12. The lad died on his way to Calcutta.
MINNIE THOMAS.

PI.

Notscant cuptoacoin strepven mapctitnot.

ALPHABETICAL ARITHMETIC.

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I R E) O K F W L (N F L
       L I O
       -----
       P P W W
       P R K F
       -------
         P K N L
         P I F K
         -------
           P W I
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ISLANDS.

1. This gives a relish to our food,
   But by dyspeptics 'tis tabooed.
2. Fresh from the mint, a coin of gold
   Quite free from "moth and dust" of old.
3. A relic of the ocean we display
   A souvenir found mid briny spray.
4. Its varied hues all poets praise
   In sunrise, sunset, storm or haze.
5. This nation often war has waged
   With cruel vigor when engaged.
6. Invoked by Indian braves with awe
   Before they bloody weapons draw. HENRY.

TRANSPOSED DECAPITATIONS.

1. Behead a girl's name, and transpose the remainder into a boy's nickname.
2. Behead a graving tool, and transpose the remainder into destruction.
3. Behead a European river, and transpose the remainder into a wagon.
4. Behead a tree, and transpose the remainder into a man's name.
5. Behead a shrub, and transpose the remainder into a sound state.
6. Behead a musical instrument, and transpose the remainder into a kind of cement. ITALIAN BOY.

ANSWERS TO PUZZLES IN THE FEBRUARY NUMBER.

WHAT CITIES AND RIVERS MEAN, TRANSPOSED.—1. Herat—earth. 2. Oka—oak. 3. Save—vase. 4. Basle—sable. 5. Ebro—robe. 6. Cork—rock.

ANAGRAMS OF SCOTT'S CHARACTERS.—1. Jeannie Deans. 2. Old Mortality. 3. Robin Hood. 4. Friar Tuck. 5. Fenella. 6. Flibbertigibbet. 7. Amy Robsart. 8. Helen McGregor. 9. The White Lady. 10. Diana Vernon.

CHARADE.—Nonsense.

SQUARE WORDS.—1.

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S A L T
A L O E
L O R E
T E E M
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2.

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O P E N
P A L E
E L L A
N E A R
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CROSS WORD.—Salt Peter.

NUMERICAL ENIGMAS.—1. Hearth and home. 2. Southampton.

PI.—Plain living and high thinking are no more.
The homely beauty of the good old cause
Is gone; our peace, our fearful innocence,
And pure religion breathing household laws.

DIAMOND PUZZLE.—

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      P
    B U T
  H O M E R
P U M P K I N
  M A K E R
    H I M
      N
```

Pumpkin.

ALPHABETHICAL ARITHMETIC.—291)5841756(20074. (*Key:* "You take Ned.")

CONCEALED RIVERS.—1. Elk. 2. Po. 3. Goose. 4. Don. 5. White. 6. Rogue. 7. North. 8. Shell. 9. Leon. 10. Red. 11. Isa.

RIDDLE.—A clock.

ECLIPSES.—1. Two, too, to. 2. Hare, hair. 3. Belle, bell. 4. Bored, board. 5. Sent, cent, scent. 6. In, inn. 7. Lief, leaf. 8. Maid, made. 9. Write, rite, right, wright.

Thanks for puzzles, letters, etc., to Wm. S. N., Effie, Albert and Augusta, Geo. H. Davis, Mary B. C., Tip, Ben, E. S. D., J. F. Wagner, Eddie Lyons, and Gus.

Send communications for the Puzzle Box to Aunt Sue, Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Something about Air.

Nothing gives me more pleasure than to have my boys and girls ask questions, and I am especially pleased when these questions show that the writer wishes to know about the common things around him. A very sensible question is sent me by Master J. A. Snow, who lives in Iowa. He says that he has been told that air, like other bodies, expands when heated, and that is all he has learned about it. Very naturally he wishes to know how much air expands for a certain amount of heat. He puts his question in this way: "Suppose we have a cubic foot of air at the freezing point of water, (32°), and heat it to the boiling point, (212°), how much space will that cubic foot of air then occupy, or how much will it expand for each degree of heat."—It is a great pity that such matters as these—which may be called the first principles of things—were not taught in every school. It seems to me much more important that every child should know all about the air which surrounds him than that he should learn the names of the different kings of England, and when their reigns began or ended. But to answer our friend: the law of the expansion of air, (and all other gases), is a very simple one as its rate of expansion is uniform for all degrees of heat. It is equal to $^1/_{492}$d of its volume at the freezing point of water (32°), for each additional degree of heat. To put it in another form: 492 cubic inches of air at 32°, will, if heated to 33°, or one degree, become 493 cubic inches, and so on for every added degree of heat. This has been found true for all temperatures, so far as has been tested. With liquids and solids the case is very different, each having its own rate of expansion. Water expands very irregularly, as you will see if you read an article on page 19 in January last, headed "8 Water, 9 Ice." Above 39° water expands $^1/_{22}$ of its bulk for each degree of heat between that point and 212°. Mercury, the expansion of which is of so much importance to us because it is used to measure heat in the thermo-meter, or heat measurer, expands very regularly between 32° and 212° for each degree of heat $^1/_{55.5}$ of its bulk; beyond 212° it varies somewhat. Alcohol expands $^1/_9$ its bulk for each degree. But the subject is a wide one, and I only intended to help my young friend out of his difficulty: perhaps from the rule I have given, he will tell the rest of us how large his cubic-foot of air would be if heated from 32° to 212°.—To your slate and pencil Master Snow, and let us know the result. THE DOCTOR.

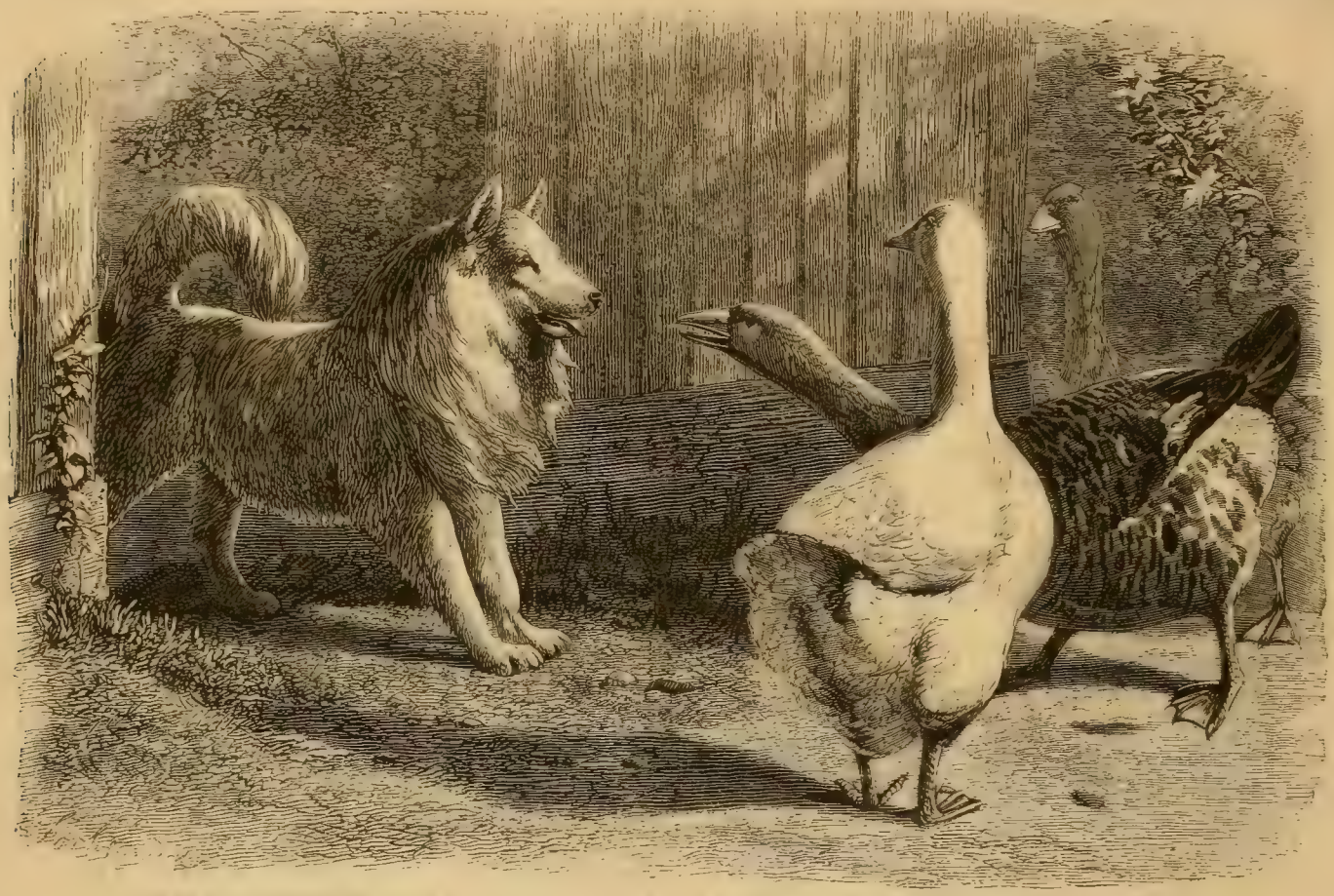
Tired Little Robbie.

BY MARY D. BRINE.

Fast asleep in grandpa's arms! Poor tired little Robbie! This has been such a dreary day for him, for mamma went away early in the morning, to visit some friends a long distance off, and her little boy has not found Mary a very cheerful companion. She has been "too busy to be bothered," so Robbie has heard for the hundreth time, he thinks, and his multitude of questions have been utterly ignored: "Run away, Robbie, and amuse yourself," Mary the maid advised, and the lonely little fellow would surely have followed her advice, if his poor little heart had not ached sorely, and if his throat had not contained such a great lump, of something, he didn't know what, that made it ache as badly as his heart. It really was very dreary! He wondered what the little girl next door did *every* day without any dear mamma; Robbie remembered when that little playmate's mother had been laid to rest under the green grass, in a beautiful place where the flowers bloomed all summer, and little birds sang in the trees around. Of course he didn't realize what a sad thing had happened for that little girl, because his own dear mamma was close beside him, and kissed away all the strange fears which at the time possessed him. But now, when for the first time he had been so long away from those loving arms, and that gentle voice which never, no, *never* answered his little foolish questions impatiently, Robbie began to understand how miserable his little playmate must be, and felt very sorry for her. He thought if mamma would only come home, he would love her forty times more than ever. The sun has shone beautifully all day, and out in the garden the flowers have coaxed Robbie with their fragrance, to come and admire their beauty, but somehow the sunshine hasn't found its way into the boy's lonely heart, and so even old Tray has wagged his tail and barked his plea for a frolic, all in vain. Puss, poor cat, is disgusted with the unusual silence, and has at last retired to the barn, to wonder why her tail has so strangely escaped its usual number of pulls and twistings. And so the long day passed, and Robbie, whose heart had only grown heavier with the approach of twilight, went to find grandpa, who was sitting all alone in his room beside the window, and coaxed him to tell a "'ittle 'tory."

Then grandpa talked of the time when he was little like Robbie, and told marvelous tales of boyish frolic, which made the little fellow laugh, and also caused Tray to renew again his attempts to please his little master. But the stories were more interesting than Tray, so grandpa went on and on with them, and all the while the shadows grew thicker and longer. How funny it seemed to the child that grandpa was ever little like himself, with such fat cheeks and *dresses* short-above fat knees! But when grandpa said, "You will some day look like *me*," why that capped the climax, and Robbie "knew better than to believe *his* face would ever be creased all over, and that *his* cheeks would sink into holes like those," poking a fat finger into grandpa's thin cheeks. It was all a mistake, he thought, and mamma would set matters right when she came home. Then gradually he grew sleepy, and when Mary brought the bowl of bread and milk, Robbie did not care at all for it, and, in fact, was off in dreamland, forgetting grandpa's stories, his own loneliness, and even mamma herself, while the curly head weighed heavier on the aged arm, and little blue eyes were safely hidden behind their thin white lids.

Yes, he is fast asleep now, the moonbeams are peeping thro' the window, and fall almost like a blessing from heaven on the two who are so silently sitting together. One life is just beginning its course, the other is nearly ready to lay its duties down forever. Sweet memories of "auld lang syne" are filling grandpa's heart, and who can tell how sincere a prayer goes up from that aged heart, for the little soldier who must buckle on his armor and stand up in the great fight between right and wrong. "God bless them both!" the moonbeams seem to say, and now we will leave them alone together, until mamma returns with papa to find her little boy fast asleep in grandpa's arms.



THE GEESE AND THE SPITZ —*Drawn and Engraved for the American Agriculturist.*

Here is a pic-ture for our ver-y lit-tle friends who are just learn-ing to read. What does this pic-ture show? There are some geese and a dog. You know that geese are ver-y big birds, and when they are cross they make a great hiss-ing, but they do not bite or scratch. These geese have liv-ed so long on the farm that they thought they were the own-ers of it; sil-ly things you will say, but the goose has long been known as a sil-ly bird. One day the man who own-ed the farm brought home a new dog. It was a Spitz-dog. Do you know what kind of dogs the Spitz are? They are most al-ways white, with nice, clean, silk-y hair, and a fine tail; the Spitz has a ver-y sharp nose, and small, bright eyes that have a ver-y know-ing look. He is quick to learn, and may be taught man-y nice tricks. This Spitz, which the farm-er brought home, went to look at the farm. As he went through a gate the geese saw him, and did not like to see a strange dog on the place, so the old geese put out their necks and said hiss-ss-ss. Do you think the Spitz would care for that? Not a bit, but he went on just as if the geese had done noth-ing. After a few days the geese were sor-ry that they hiss-ed at the Spitz, because a bad strange dog came and be-gan to bark at and wor-ry the geese. When the Spitz heard the noise, he for-got how rude the geese were to him, and drove off the bad dog. Do you not think the geese must have felt ver-y fool-ish when they saw the dog they had hiss-ed at help-ing them? When you see a boy or girl mak-ing fa-ces, or say-ing rude things to a strange boy or girl, you will see that they act ver-y much like these geese, and if no one takes no-tice of them they will stop. Do you know why these dogs are call-ed Spitz-dogs? We were told that it is a Ger-man name. In Ger-man the word for sharp or point-ed is spitz, and as these dogs have ver-y sharp and point-ed nos-es, they were call-ed spitz-dogs.

TIRED LITTLE ROBBIE AND HIS GRANDPA.—(*See page* 149).

WALTHAM WATCHES

HOWARD & CO., No. 222 Fifth Avenue, New York, continue to send single Waltham Watches by Express or by Mail to any part of the country, no matter how remote, without any risk to the purchaser. Having sold Waltham Watches on this plan for the last six years, their customers are numbered by thousands, and from almost every county in the Union. In every case the purchaser gets a good reliable Watch, and full value for the money. Great improvements have been made during the present year; all grades and sizes are now made both as key-winders and stem-winders. Our new price list, which is sent free, describes all the new Watches with prices of each. Write for it, and mention that advertisement was seen in the *Agriculturist*.

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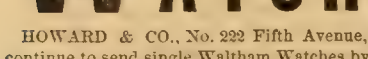

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CHAPTER VI.—Artificial Impregnation.
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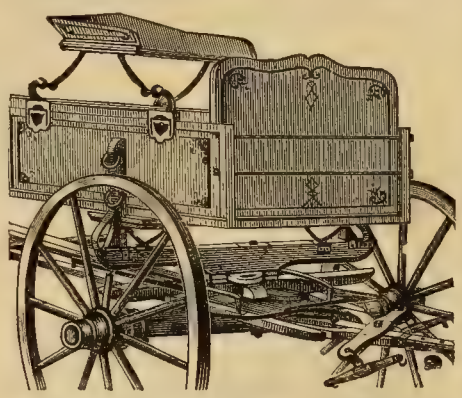

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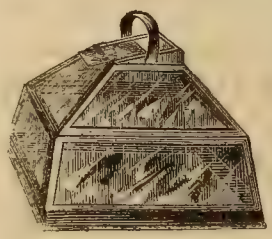

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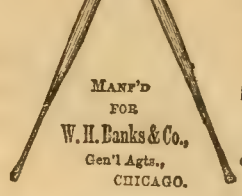

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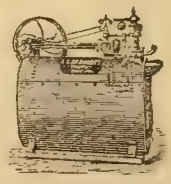

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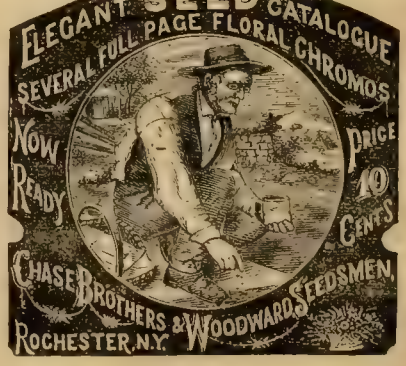

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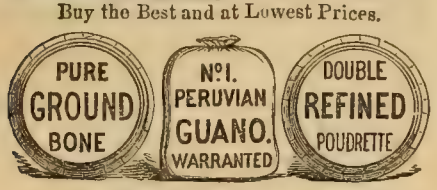

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Bone Sawings, Bone Dust, Bone Meal (for cattle feeding), Bone-Black, Dried Blood, Dried Flesh, and all forms of Special Fertilizers, made of animal matter, for growing Tobacco, Sugar Cane, etc.; also Ammonia, Potash, and Soda Salts, furnished at reasonable rates.

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To every Subscriber for 1875, [Volume 34,] received after this date, the Publishers will present an exquisite Chromo, *as detailed below.* Three beautiful Oil Paintings, executed expressly for the ORANGE JUDD COMPANY, and entitled "MISCHIEF BREWING," "UP FOR REPAIRS," and "LOOK OUT!" have been reproduced in chromo in the finest style.

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Author of "Barriers Burned Away," etc.

NOTICES BY THE PRESS.

The author takes us to his garden on the rocky hill-sides in the vicinity of West Point and shows us how out of it, after four years' experience, he evoked a profit of $1,000, and this while carrying on pastoral and literary labors. . . . . It is very rare that so much literary taste and skill are mated to so much agricultural experience and practical good sense. —*Harper's Magazine.*

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A very charming book, not only by reason of its pleasant style, but for its quiet refined humor and fund of really useful information on the subject of gardening.—*Boston Gazette.*

It deserves to stand side by side with "My Summer in a Garden."—*Christian Register.*

A fresh, lively work.—*N. Y. Observer.*

One reads without weariness and learns much of practical value.—*Chicago Evening Journal.*

Full of information. Explains just what the reader wishes to know. We most heartily commend it.—*Providence Evening Press.*

A chatty, sensible, profitable book.—*Cleveland Herald.*

The book gives much valuable information, and gives it in the pleasantest manner imaginable.—*Detroit Daily Union.*

Price, Post-paid - - - - $1.50

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 127.

Cheese Competition.—It is worthy of note that the Scotch dairymen have offered to compete for a sum of $500, with the English dairymen, in an exhibition of cheese. This course has been taken with the laudable view of bringing their cheese to the notice of the public. It is also an interesting fact that at the annual cheese exhibition, held at Frome, in the center of the Somersetshire and North Wilts dairy district, there is a class open to the whole world, for the best sample of cheese of any make. These facts have been kindly brought to our notice in a private note from Mr. H. F. Moore, of the London *Agricultural Gazette,* in which he states that at the Frome exhibition of last year, great disappointment was expressed that no competitors appeared from any greater distance than an adjoining county, and hopes were held that in time American exhibitors could be induced to compete. We are glad to take an opportunity at this seasonable moment, to call the attention of American dairymen to this excellent opportunity of cultivating this very favorable opening, for extending the market for their goods.

The National Butter and Egg Association.—The third annual convention of the above named association was held at Chicago on March 3rd, and two following days. The proceedings were of special interest to dairymen, as their effect has been, or will be, to abolish the injurious distinction which has heretofore prevailed against the reputation and interest of Western butter-makers. A resolution was adopted that the sectional discrimination against butter should cease, and quality, and not locality of manufacture, be the basis upon which butter should hereafter be graded. Another resolution was adopted condemning adulteration of butter, and a committee was appointed to petition the legislatures of the several states to enact laws prohibitory of adulteration. The committee on grading submitted its report, recommending that all grades of a sectional character be abolished, and that "extras," "firsts," "seconds," and "thirds" should represent the respective qualities of butter that might be brought to market. The convention then adjourned to meet in Davenport, Iowa, in March, 1876.

A Cheap and Efficient Mole-trap.—"T. P. T.," Knoxville, Tenn., writes, I give you the following simple contrivance for trapping moles. It is founded on the principle that moles are disinclined to a backward movement. Take two large horns as straight as can be procured, turn the points together and deposit them in the mole's beat or track, so that in passing along his track, which he does frequently, the mole will go into one of the horns. Two horns are used that he may be taken going either way. When once in the horn, the mole will labor assiduously, and for days, to pass through rather than to retreat. By this labor and delay he is put into the hands of his captor.

No Name of Course to a letter from one in Florida who is in doubt about his title to some land. His answer is of interest only to himself, but as he does not give his name, he, with fifty or so others, must go unanswered. Always sign your name.

Mapes' Superphospate.—"G. C. W.," Bergen Co., N. J. This is one of the few fertilizers we have not used, and therefore are unable to speak from experience. We have but one rule in regard to artificial fertilizers; the advertiser must satisfy us by the analysis of a competent chemist, of its composition, or he must inform us exactly how it is made; besides this the maker's reputation for fairness, must be such that we have no reason to suppose that he will send out an article of less value than the analysis shows. The appearance of Mr. Mapes' advertisement in our columns, is evidence that these conditions have been met, and that did we wish a fertilizer of that kind, we should purchase it with confidence that it is just as it is represented to be.

Out-door Whitewashes.—As the season approaches for "fixing up around the house," numerous requests come for a permanent wash for fences, out-buildings, etc. These are made with common lime-wash for a basis, and some material is added to prevent the lime from rubbing off; glue, or rice paste, salt, sulphate of zinc, etc., in one way or another produce the

effect; and considerable quantities of tallow or other grease are added to the slacking lime, which combines with a portion of the lime to form an insoluble lime soap which serves, when applied, to hold the rest of the lime in place. Whitewashes may be colored or tinted with any of the earthy paints, such as yellow ochre, umber, and Spanish brown, either alone or in combination; the colors should be dry; experience can only determine the quantity to use; to judge of the tint, spread a little upon some surface and let it dry. We annex a few recipes, most of which have been given in former years. Slake half a bushel of lime, add sulphate of zinc, (white vitriol), 2 lbs., and common salt 1 lb....One part of water-glass, (silicate of soda or potash), to five parts of whitewash, is said to be very permanent. We have not tried it....Using water enough to slake the slime and skimmed milk to thin the wash instead of water, will make it more permanent....While the lime is slaking and hot, add 1 lb of tallow or other clean grease to what will make a pailful of wash, stir thoroughly, and dilute while the lime is still hot, with water gradually added. Careful stirring and diluting while hot, or with hot water, are necessary to prevent the lime soap from curdling....The following is nearly the same as the recipe sent out by the U. S. Treasury Department to keepers of light-houses. We have used this to some extent, and it has worn fairly for two years, considering it was upon rough boards. Take half a bushel of unslaked lime, slake it with boiling water, covering it during the process to keep in the steam; strain the liquid through a fine sieve or strainer, and add to it a peck of salt previously well dissolved in water; three pounds ground rice boiled to a thin paste, and stirred in boiling hot; half a pound Spanish whiting, and a pound of clean glue which has been previously dissolved by soaking it first, and then hanging over a slow fire in a small kettle inside a large one filled with water; add five gallons of hot water to the mixture, stir it well, and let it stand for a few days covered from the dirt. It should be put on quite hot; for this purpose it can be kept in a kettle on a furnace. A pint of this mixture will cover a yard square of the outside of a house, if applied with a large paint-brush.

"Are You Going to Paint?"—"We are." The question is upon the circular of the Averill Chemical Paint Company, the answer is ours. If the questioning be carried further, and we are asked, "What paint shall you use?" and we reply "The Averill Chemical Paint." "That's because you get your paint free for this notice," adds a skeptical reader—not a bit of it. We never had a drop of the paint, and never expect to have, without paying for it in money. When the paint was first freely advertised, and much talk made about it, we had just built a barn and other out buildings, and in order that we might know something about the paint, for which such claims were made, we went, unknown to the agents, and purchased enough to give one building one coat, and another two coats; that was between 5 and 6 years ago; the paint then applied being so satisfactory at the present time, that having built a tool house, and work shop, and a shed, and having a fence that needs painting, we shall order some more of the Averill paint to use upon them. When we have tried a thing and found it good, we give the readers the benefit of our experience, and if any advantage results to those who have the article for sale, it is their good fortune.

The South Haven (Mich.) Pomological Society.—Michigan is rapidly rising in importance as a fruit-growing State; its various pomological societies are prosperous, and their meetings show that the people take a great interest in fruit culture. At the January meeting of the South Haven Society a well considered programme was adopted for each monthly meeting during the year, and steps were taken towards contributing to the Centennial Exhibition in 1876.

Wide-Awake Agricultural Dealers.—Messrs. Geo. A. Allen & Co., of Newbern, N. C., dealers in agricultural implements and fertilizers, have adopted the very sensible plan of offering copies of the *American Agriculturist* to their customers. Any one buying goods to a certain amount receives as a premium a year's subscription to the *Agriculturist*. This benefits the farmer by giving him a good guide for his work, and it benefits the dealer by teaching farmers that they need to use his wares more liberally. In addition to this premium, the Messrs. Allen give prizes for the best crops grown from their seeds, or with their fertilizers, and thus cause a healthy emulation among their customers. This giving of prizes for the best crops grown from seeds bought of them, is largely done by English dealers; but few in this country have adopted it. While we commend the good sense of Messrs. Allen & Co., of Newbern, N. C., in selecting the *Agriculturist* for premiums, we hope that their enterprise in this and other matters will bring them good returns. This firm shows further enterprise in publishing a sheet of "Timely Topics for our Customers," in which they gather up the reports of crops raised by their customers, fertilizers used, implements employed in working, the quantity harvested, cost of raising, and amount for which it was sold. This little sheet of only two pages, not quite so large as this, is clear, compact, and much more instructive and useful than many of the lumbering reports printed by some agricultural societies.

Grape Vine Patent.—"H. S.," sends the circular of J. B. Tillinghast, setting forth the excellence of his vineyard, and at one side a cut of a vine with two canes trained spirally around a stake or post, over which is printed Patented Oct. 13, 1874, and below proposals to sell the patent. Can it be possible that our Patent Office has granted a patent for the spiral training of a grape vine! We have known so many foolish things to be done there, that improbable as it seems, we fear that they have given a man a patent for twisting a vine around a stick. In the picture the vine is twisted from left to right, and we have no doubt they would give another patent for twisting from right to left. We can not see what possible good this patent will do Mr. Tillinghast, for it is not at all likely that he will fine anybody for the right to train their vines spirally; as has been done from very early times, and has been published over and over again in both Europe and America. Nature has many a time taken her wild vines spirally around a trunk or branch, but now she had better stop, as Joseph B. Tillinghast has gone and patented that little trick of her's. And whole provinces of Italy and Spain, ought to be advised that the Great American Government did not know that a vine had before been twisted around a stick, and has granted a patent for this great discovery.

Egyptian Corn, and Japan Pea.—Both these articles are advertised so extensively, and in such an extravagant manner, that we do not wonder that many write to ask whether or not they are humbugs. Of the "Egyptian corn," we can judge only from the advertisement, not having seen the grain, but think we are safe in assuming that it is not any variety of Indian corn, but a sorghum, varieties of which in the eastern countries are largely cultivated, and there occupy the place that ordinary grains do with us; since the beginning of the century there has now and then been introduced some variety of sorghum with an attractive name, and great claims as to its value. None of these have ever found a permanent place in our agriculture, and we doubt if any ever will. In this, as in all such matters, we advise that a trial, if made at all, shall be an experimental one only....The Japan Pea, as stated last year, promises well as a fodder plant; it is a tall, bushy, hairy plant, does not run or climb, and bears a great profusion of small, few-seeded, hairy pods. Having had no description of its character, we planted the seeds too close, and the plant did not develop properly; but we should judge that the yield would, under favorable circumstances, be very large. As a plant to plow under, or to grow for fodder, it is worthy of attention, especially in the southern states; it is a mistake to recommend this as a table pea.

As to Sheep.—"Dr. W. C. P.," Hooversville, Md. A Cotswold ram would make an excellent cross upon ordinary middle wool sheep, and a young vigorous ram would serve a flock of 50 ewes. If lambs are wanted in February, the ewes are coupled in September. Ewes go in lamb 5 months. The advertising columns is the proper place to look for information as to shepherd dogs and other stock. Good pasture land ought to carry 5 sheep to the acre.

Pigs and Pork.—"Dr. W. C. P." There is nothing in the objection to black swine, that their flesh is darker than that of white ones. The color is not even skin deep, and when properly scalded and cleaned, a black pig's ham can not be distinguished from that of a white pig. Chester Whites can be procured of parties whose names will be found among the advertisers. A sow should be a year old before she is allowed to breed. The litter of a sow younger than that is generally a failure.

Corn Crusher.—"J. H. N.," Nawosha, Ga. The Little Giant corn and cob crusher, would break up corn ears in the shuck, so that the whole could be fed together. If not made sufficiently fine the first time, it should be ground a second time. R. H. Allen & Co., 189 Water street, N. Y., make the machine.

Pumpkin Seed for Cows.—"E. M. S.," Warren Co., Ohio. Pumpkin seed are thought to have a diuretic effect, and therefore act injuriously upon milking cows. In feeding pumpkins, it is safe to have the seeds removed.

Hand-Power for Sawing Wood.—"E. M. S.," Twenty Mile Stand, Ohio. Nothing is gained by substituting a hand-power for sawing wood, in place of the common "buck saw." A cheap horse-power saw can be made, which will really save labor. An illustration of such a machine is in preparation.

Covering Manure.—"Western," Atlanta, Ill. There is no necessity for covering a manure pile that is daily receiving additions. The rain that falls upon the heap is not more than enough to keep it properly moist, if it is made flat upon the top to prevent washing, and is turned twice through the winter. The proper method of managing manure, depends chiefly upon convenience, one way is as good as another if it is kept from over-heating or from washing.

Black Spanish Fowls.—"W. D.," Indianapolis. Black Spanish fowls may be procured of almost any of the poultry breeders whose addresses are found in the advertising columns.

Spreading Manure.—"J. F.," Montgomery Co., Iowa. The objection against leaving manure in heaps for any length of time in the fields, instead of spreading soon after it is hauled, is that a few spring showers wash a large portion of the soluble portion into the soil, and cause an uneven distribution. The better plan is to spread from the wagon, or as soon after it is dropped in heaps as possible. It is a mistake to suppose that any loss occurs from spreading the manure upon the surface before it is plowed in; on the contrary, it is well ascertained that nothing goes off into the air, the soil gets everything, and the more evenly it is spread at the first, the more uniformly the soil is fertilized.

Over-feeding Pigs.—"J. H. M.," North Branch, Minn. When young pigs are over-fed, they often suffer from difficulty of breathing, or from congestion of the lungs or brain. The symptoms exhibited are staggering and convulsions and death in a state of stupor. It is probable that overfeeding was the cause of the death of your pigs.

Treatment of Calves.—"Evergreen Farm." Diarrhœa in calves is often caused by overfeeding. Stuffing any young animal with oats, oatmeal, etc., and keeping it shut up from fresh air lest it take cold, is very unwise treatment. Give plenty of good hay and a quart of bran a day, and turn out for exercise every day. If calves will not eat grain, do not give it to them; it is a proof they do not need it. When a calf loses its cud, give two ounces of epsom salts and a teaspoonful of ginger. The cause is indigestion. Give them also chalk to lick, or carbonate of magnesia, with salt. A quarter of a pint of *raw* linseed oil is also a good remedy for loss of cud in a calf, a pint is a dose for a cow.

To prevent a Horse from Rolling.—"T. S. C.," Catharine, prevents a horse from rolling by the following method, viz.: Tie one end of a cord to the ceiling above his head, and the other end to the top of the horse's head-stall. The cord may be so long that the horse can nearly touch his nose to the floor on which he stands. He can then lie down comfortably, which is a great consideration if he is required to perform heavy work. But he can not roll, because he can not throw the top of his head under, which some horses will do, when tied very short by the halter strap alone.

Gas-Lime for Cabbages.—J. Kneidel. The lime when first taken from the purifiers has a very strong odor, and is so destructive to vegetation, that we can not advise its use. After exposure for some weeks to the air, some of the deleterious matter is evaporated, other portions are so changed by the action of the air as to be harmless, and the gas-lime can then be used the same as ordinary lime and in the same quantity.

Sheep-Laurel ("Lamb-kill.")—"J. O. F." Danielsonville, Conn. The plant known as lamb-kill is the *Kalmia angustifolia*, and is poisonous to sheep. (The book "Our Farm of Four Acres" is an English work, which may be a true statement of what actually occurred, but is inapplicable to our circumstances, except for its hints and suggestions.)

How to Feed a Horse.—"S. C. U. D." Glenham. When a horse is brought into the stable, warm, after a drive, it is proper to let him cool off before he is fed. A small quantity of hay, or a quart or two of water to wash the mouth, will do him no harm, but no grain should be given until the horse is cool.

Plowing for Corn.—"A Subscriber." The best plan is to plow a clover sod for corn as late as possible, in order to get as large a growth of clover to plow under as may be; a fresh surface which is planted as soon as plowed, and while moist and mellow, so that the crop gets the start of weeds, and a plentiful supply

of decomposed vegetable matter for the crop to feed upon after the first growth has been stimulated by some artificial fertilizer, such as guano or dried blood, applied at the planting. Upon a good sod thus plowed with a jointer or double sod plow, the crop will defy drouth.

Zinc Labels are among the most permanent for fruit and other trees, shrubs, etc., and we have described the methods of making them. Those who prefer to buy their labels ready made, will find those offered by J. A. Cross, Fultonville, N. Y., exceedingly neat and handy; Mr. C. has also an ink for writing upon them.

Horticulture in Wisconsin.—The State Hort. Soc'y. has divided the state of Wisconsin into twelve districts, and appointed a committee of observation, one member to each district, the object being to collect information, especially as to the adaptability of the varieties of fruit to the different parts of the State. The society proposes to make an exhibition of fruit, at the Chicago meeting of the American Pomological Soc'y.

Hyacinths — Camellias. — "Mrs. A." The small bulbs should be broken off from hyacinths grown in water; on those in the open ground they are of no use unless you wish to propagate the bulbs.—Camellias are pruned after flowering is over, and new growth is about to commence.

Trouble with Apples.—N. H. Birmingham. Had there been any State named in your letter, or any legible post mark, we should have written for further particulars. From what you say, we infer that the trouble is what is known as bitter rot. The general remedy for such defects is pruning, good culture, manure, especially lime, and thinning to prevent over-bearing. Barry's Fruit Garden, price $2.50, will probably suit you.

Treatment of Thrush.—"F. S. C." Thrush is a disease of the sensitive frog of the hoof, from which a fetid discharge escapes. It sometimes accompanies navicular disease, and is sometimes caused by the horse standing upon heating manure. The remedy is to inject a few drops of muriatic acid into the center of the frog, once a day for a few days, to clean the stable floor, and to give half an ounce of sulphite of soda every day in the feed, for a week or two.

Codling Moth and Paris Green.—J. Plank, Iowa. We should not advise trying Paris green for the Codling moth; as the mischief is done within the apple, it is not easy to see how it can be of use.

Making Manure.—"E. L. H.," Clemmonsville, N. C. The Bommer method of making manure, is one that could be extensively practised in the southern states with profit. It is a method that might be studied and practised profitably by every farmer, and is everywhere available. It is simply a plan for composting materials which go to waste upon the great majority of farms and gardens, and is as applicable to a garden as to a farm. The price of the pamphlet is 25 cents.

"Patent Medicines."

The Independent's View of Them.

That quack medicines, even of very objectionable sorts, could be advertised in the columns of the Independent, every one who has looked at that remarkable journal, must be well aware, but we did not think it possible that even that journal could go so low in making a bid for that class of advertisements, as to devote over a column to their praise, as it does in its issue of Feb. 11th, last. Any thing more specious than this article, is rarely seen; it praises doctors who live in "large cities and towns;" it is sweet on them, as probably some of them take the Independent; but we are given to understand that in "tens of thousands of villages and hamlets," "no good physician can be found," and as "cross roads doctor" is used as an epithet of detraction, we are led to infer that medical ability has some relation to local topography. We wonder if this Independent man was ever off of the pavements of New York and Brooklyn, that he can thus by implication cast a slur upon all physicians, save the very small minority who live in "large cities and towns." The writer of that article evidently does not know that a physician may even live at a "cross roads," and yet have money enough to subscribe for the Independent, or self interest would have prevented him from thus insulting them. The medical schools were never more prosperous than now, the standard of education never before so high, and every year there are young men graduating, who by nature and education are just as capable as any who ever received their diplomas. Does the Independent man suppose that all of these young physicians, (who, fresh from the schools and hospitals, are far better qualified than the majority of those who graduated 20 years ago), who leave the schools by hundreds each year, can all settle in the "large cities and towns?" Alas! even if they come under the ban of the Independent, they must go to the "villages and hamlets," and sad to think! some may even set themselves down at the "cross roads." With a pretty wide knowledge of country doctors, extending through many years and many states, from New England hamlets to the very frontiers of civilization, where rifle and revolver were as much a part of the outfit as the saddle bags, we feel bound to defend them against this most unjust reflection of the Independent. We know that there are incapables among country doctors, as well as we know that there are such among city editors, but we have been actually surprised at the general intelligence, the freshness of knowledge, and enthusiasm under adverse surroundings, manifested by them as a class, and we risk nothing in saying that these men study more after graduating, and are better "posted" in the current literature of their profession, than the city doctor, who in large practice has little time for improvement. It is bad enough that this Independent article should imply that country doctors are less capable than those in cities and towns, but when it makes their alleged inferiority a text for teaching people to use what it calls "patent medicines," in preference to employing them, it is an act of meanness of which we did not suppose even the Independent capable. This editorial we regard as an eminently mischievous one; but we have not space to show the extent it will go, regardless of the consequences to its readers, if it can only please its advertisers, but will give a single instance: It says "Thousands of infants are killed by unskillful medical treatment, and we would sooner use Mrs. Winslow's Syrup, (if given by the mother), than trust the life of the child to the old cross-roads doctor." Here is a paper which gets the support of many good people, under the pretence of being a religious teacher, that openly advocates the use of this "Winslow's syrup," when it is well known to contain a large amount of morphine—a fact carefully concealed, and is considered by good medical authority, as having largely contributed to infant mortality. If the theological part of the paper has no more regard for the souls of its readers, than this quack medicine part has for their bodies, they are in a sorry plight. The article bases its praise of "patent medicines" upon the fact that they are prepared by responsible parties whose *interest it is*, etc. That is just what is the matter with the article in question, it is prepared by a party "whose *interest it is*" to get as many quack medicine advertisements as possible, without regard to what may be the effect upon its readers. It does not touch upon our great objection to all these medicines, which is that by their placards, pamphlets, and advertisements, they so act upon the minds of half sick and nervous people, by enumerating every possible qualm and uncomfortable feeling that such persons are sure to have, and thus induce an indiscriminate dosing, and the use of compounds of the nature and ingredients of which the taker is wholly ignorant. But our views on these matters are well known to our readers. If physicians who live "in the thousands and tens of thousands of villages and hamlets in the country, where *no good physician* is to be found," wish to know the Independent's estimate of them, and see how inferior their skill is to that of "Mrs. Winslow" and the rest, they can read the entire article on page 19 of its issue of February 11th, 1875.

"Walks and Talks" Correspondence.

This season of the year brings me a great many letters. I am glad to get them. The Deacon and I read them over, and talk about them. But it is impossible to answer them all in the *Agriculturist*, and in any case I have to make my remarks very brief.

Combing Wool.—A correspondent asks, how long wool must be to pass for combing wool. This depends on the fineness of the wool; if very fine, say one cross of Cotswold or Leicester on Merino ewes, 5 to 6 inches will answer; if coarser, say two or three crosses of long-wooled blood, 6 to 8 inches; and for coarse wool, 8 to 10 inches.

Petroleum as a Lubricator.—"W. H.," of Tidioute, Pa., writes that he finds crude petroleum the best oil for machinery. I have used it for years. The petroleum we use for painting, is too thin, except in very cold weather. For summer use I mix it with tallow. When common petroleum is exposed for some weeks to the air, the volatile portion evaporates, and that which is left in the vessel, is thick enough for oiling a mowing machine. I have not evaporated any on purpose. We keep a pail of petroleum in the tool-house at all times, and usually find heavy oil enough in the pail to fill our oil-cans.

Stock Insurance Co.—"R. C." We ought to have such companies. They have them in England, and I think there are some here in the western states, but I am not acquainted with the terms. My own stock is insured against fire and lightning, but not against disease. Ordinary insurance covers only the value of the animal for ordinary purposes. If you wish to insure high-priced thoroughbred stock, you must insure it separately.

Peas vs. Summer-Fallow.—"C. A. W.," Alleghany Co., N. Y., writes; "I am with you in almost everything, except summer-fallowing. Here and for us we consider that a good crop of peas is better than a summer-fallow."—My father used to say the same thing. And, in fact, my own practice may be supposed to favor this idea. I often sow oats and peas, and follow the crop with wheat. Still I contend that on strong, heavy land, as a rule, peas are *not* better than a summer-fallow. If the land is rich enough to produce a maximum crop of peas, and a maximum crop of wheat afterward, by all means sow the peas. But if the land will produce only half a crop of peas, and half a crop of wheat afterward, (say 15 to 18 bushels per acre), then you had better summer-fallow, and try to raise one good crop rather than two poor crops. The land will be cleaner, and the profits larger.

Manure Piles in Winter.—"Will you explain," ask "C. A. W.," "how you keep a manure pile fermenting, with a thermometer at zero to 20° below? I have tried it, and failed?"—Perhaps it was nothing but cow-dung, with very little straw. I have had a pile of manure fermenting all this winter. The fermentation should start before the cold weather sets in; and the heap should be large enough to keep out the cold from the center. I put my horse-manure in the pig pens. This makes it very rich, and the richer it is, the more readily it ferments.

Beans, Potatoes, Wheat.—"C. A. W." asks what I think of the following rotation on sandy loam soil. "Beans on sod; next year early potatoes, followed by winter wheat, and seeded down with timothy and clover. This gives two hoed and cultivated crops previous to seeding down, and beans pay me better than corn."—The rotation is a good one, but you ought to manure heavily for the potatoes. If we have to fight the Colorado potato-beetle, we can not afford to go over two acres to get two hundred bushels. We must grow them on one acre.

Western Hogs.—"M. H. B.," Ind., writes, "I think you are a little rough on western pigs, yet 'pity, 'tis, 'tis true.' I sold a lot of 40 head, 12 to 16 months old, that averaged 300 lbs."—That is good. I am just as "rough" on coarse, ill-bred eastern hogs as on the same class at the west. We have plenty such here. All good farmers should reprobate them. They lower the standard of our pork and bacon at home and abroad. If our bacon was *uniformly* as good as the Irish, it would soon bring the same price in the English market, and this would add six or eight cents a lb. to the price here, and put many millions of dollars into ou pockets. The improvement which has taken place in western pigs during the last six or eight years, is wonderful. Push on the good work a few years longer, and we shall have the finest pigs in the world—and the world will come hither to buy them.

Starving Hogs.—"M. H. B." says, "We are getting good round prices for our pork, but owing to the high price of corn, many farmers are hauling their corn to market and starving their pigs. The consequence will be light weights and small profits next winter."—This is so. Those farmers who have good pigs, and who feed liberally, will hit it.

Oats and Peas.—"J. D. B.," Warrenton, Va. If oats and peas succeed with you when sown separately, I see no reason why they will not do as well with you as they do with me as when sown together on rich land. It is no use sowing them on poor land. If your land is poor, try 200 lbs. of guano and 100 lbs. of gypsum per acre, or if you have a drill with a manure attachment, drill in 200 lbs. superphosphate per acre, or better still, 100 lbs. superphosphate and 100 lbs. of nitrate of soda. The nitrate of soda will help the oats, and the superphosphate will probably help the peas and oats both.

Rape for Sheep.—R. P. Ewing, Cumberland Co., N. J., writes "What I learned of you about rape has been money in my pocket. I like it very much for sheep, I can raise it as big as it will grow. An acre will keep 20 to 30 sheep two months. Ewes are put in good order by pasturing clover and rape. Could I not fatten wethers in the same way, by adding a pint of corn each per day? Say buy early in Sept., and sell at Christmas,"—Certainly; but you would probably make more by keeping them two months longer, and finishing them off in the yard.

After effect of Manures.—Mr. Ewing asks, "In calculating the cost of a certain crop, is it right to deduct therefrom one half the price paid for the fertilizers used?"—With bone-dust and farm-yard or stable manure, yes; but with *good* artificial manures, such as superphosphate, nitrate of soda, or guano, no. The better the artificial manure, the less effect it has on the second and third crop.

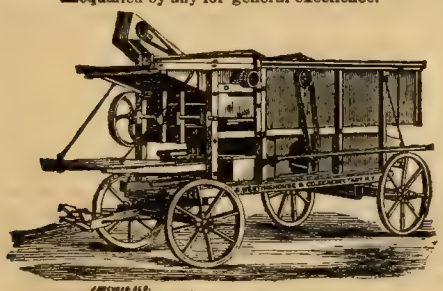
"Our Preference is the Buckeye."
—*American Agriculturist*, June, 1872.

HIGHEST HONORS AT THE GREAT EUROPEAN FIELD TRIALS OF 1874.

STYLES, SIZES & PRICES TO SUIT ALL FARMERS.
Descriptive Circulars Forwarded by Mail.

THE WESTINGHOUSE

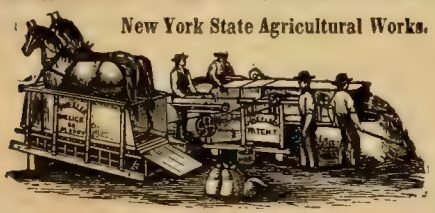
Threshing Machines and Horse Powers are unequalled by any for general excellence.



Threshers for all sizes of Horse Powers and Steam, Lever Powers for 4 to 10 Horses, and Endless Chain Powers for 2 and 3 Horses—and Engines from 4 to 10 Horse Power. All with late and important improvements. Send for Circular.
G. WESTINGHOUSE & CO., Schenectady, N. Y.

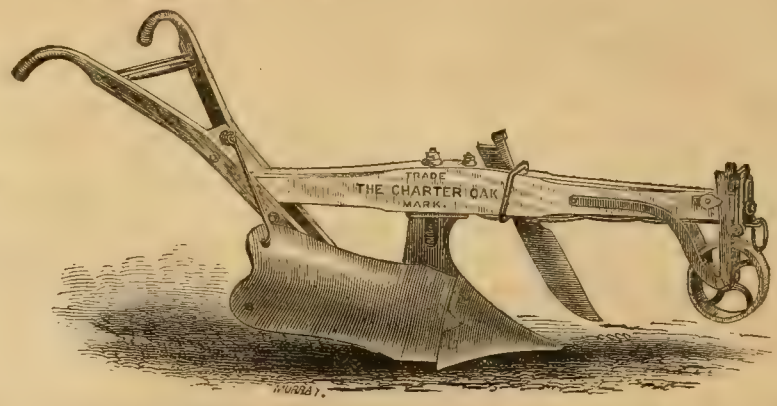
MEDAL MACHINES.

New York State Agricultural Works.



WHEELER & MELICK CO.,
Patentees and Manufacturers of
Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters Ithaca Wheel Horse Rakes, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses Dog and Pony Powers, etc., etc.
ALBANY, N. Y.
Send for Circular.

FOUST'S HAY LOADER, Improved for 1875, including Wind-Break Attachment. Warranted to pitch a ton of hay from the winrow in five minutes, and take it as clean as by the hand fork. Adapted to all ordinary meadow land. Manufactured at the Ag'l Works, Meadville, Pa. Send for Descriptive Circulars early.



A REVERSIBLE PLOW,

Adapted to General Work, described as follows:

1st.—The Share has an inner or swivel-angle, less than a right angle, which allows the erect edge, when in position, to coincide with the line of the standard and coulter, which last is fixed in the center of the beam. Thus the relation of these important parts is identically the same, as in the common fixed or "land-side" plow.

2nd.—The form of the Mold-Board is such that, instead of presenting an angular or rounded ridge to the furrow-slice, especially when the plow is driven deep, it opposes a flat surface, having only the curve necessary to turn the furrow properly. This form enables the plow to be run at various depths, at no disadvantage to the quality of the work.

3rd.—This Plow is adjustible to different widths of furrows, taking more or less land, as may be desired. The pivoting of the share to the standard admits of this, and it is regulated by the brace, which holds in position the rear end of the mold-board, to which a greater or less outward set is given, and to the share a greater or less landward set.

4th.—An elastic and adjustable Draft-Rod, preventing straining of the team and breakage of the plow and harness.

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HIGGANUM MANUFACTURING CO., Higganum Conn.
AND FOR SALE BY ALL THEIR AGENTS.
R. H. ALLEN & CO., Sole Agents in NEW YORK.

THE MITCHELL WAGON.

THE
Best Proportioned,
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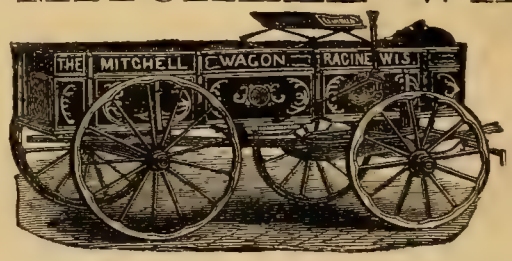
AND
Lightest Running
Wagon in the Market.
The original, well known
RACINE WAGON.



In use and for sale in nearly every
STATE & TERRITORY
IN THE UNION.
All work fully warranted.
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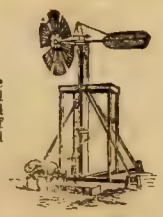
Halladay's Standard
Wind-Mill.



PERFECTLY Self-Regulating. The Best, Cheapest, most Durable and Popular Mill made. Manufactured under the immediate supervision of Inventor **21** years. Two million and a half dollars' worth now in use.
Send for Catalogue.
U. S. WIND ENGINE & PUMP
BATAVIA, ILL.

I have invented the best Hay, Straw and Stalk Cutters in America, for **hand or horse-power.** Can sell you a good machine for $9 to $10, and make you allowance for freights. I want a responsible farmer in every place to sell them. Samples will be sent, not to be paid for till tried on the farm, and found satisfactory. Circulars free.
WARREN GALE, Chicopee Falls, Mass.

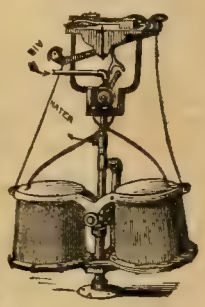
W. H. BANKS & CO.,
SEEDS.

A large supply of Field, Garden and Flower Seeds, WARRANTED FRESH. Send for Price List.
Comstock's Seeder, Hand Cultivator,
Weeder, Strawberry Vine Cutter, Shovel and Mole Plows,
Combined or Separate.

W. H. BANKS & CO., Wholesale and Retail Seedsmen,
34 & 36 S. Canal St., cor. Washington, **CHICAGO.**

Allen's Planet Jr. Silver Medal
HAND DRILLS and WHEEL HOES. THREE new styles. They "*sow like a charm,*" and hoe *better, easier, and six times faster* than the best hand hoe. S. L. ALLEN & CO., Mfrs 119 S. 4th St., Phila., Pa. Circulars free
A LIVE AGENT WANTED *in every town.*

AUTOMATIC PUMPS.



Water driven to any height and distance by *compressed air.* Country houses supplied cheaply and certainly for bath-rooms, water closets, hot and cold water faucets, etc.
Plenty of fresh water for stock on farms. Address
HARTFORD PUMP CO., Hartford, Conn.
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A full description of the pump may be found in the October number, 1874, of the *American Agriculturist.*

PATENT WHEEL-HOE.

PRICE $10.

Every **Gardener, Onion Grower** and **Nurseryman** needs it—saves much weeding—protects plants from being covered—does the work of *six* men.
Send for descriptive Circular.
WM. L. BOYER & BRO., Philadelphia, Pa.

Matthews' Garden Seed Drill
Is the latest and best production of the inventor of Holbrook's "Regulator." No other equals it. Before you buy any send for circular to
J. B. SMALL,
BOSTON, MASS.
(Successor to F. F. Holbrook & Co.)

Holbrook's "New Regulator" Seed Drill
Sows all kinds of Vegetable Seeds with regularity. The STANDARD machine. REMODELED for 1875. Combines the best points ever produced. Simple, durable, *easiest handled,* OPEN WHITE SEED CONDUCTOR SHOWS THE SEED DROPPING. Give satisfaction. Circulars Free. Made by E. E. LUMMUS & Co. 20 S. Market St. Boston, Mass.
$12.00 Boxed.

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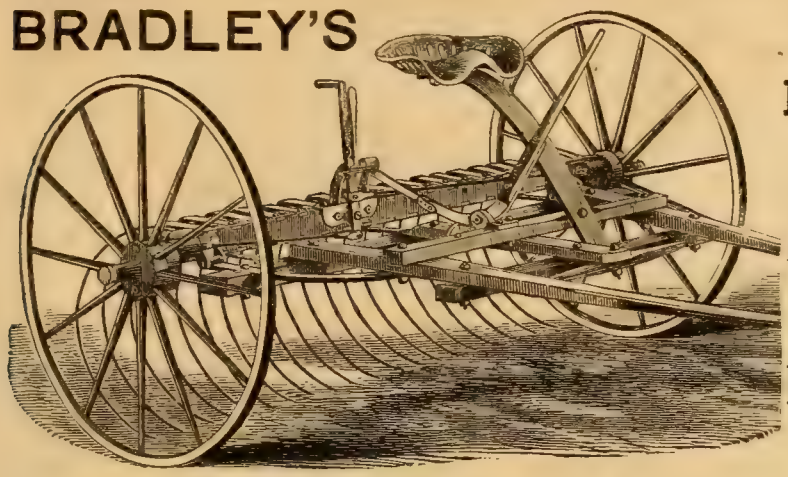

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DUMPS FROM BOTH WHEELS.

Upwards of **500** sold in 1874, giving entire satisfaction. Not one single instance of failure. Guaranteed to be the best. Send for Descriptive Circulars.

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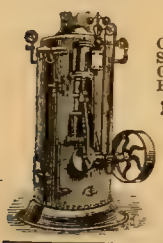

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Complete with Boiler, Engine, Grates, Smoke Bonnet, Feed Pump, Water Gauges, Steam Gauge, Safety Valve, Blow-off Cock and Judson Governor.

Prices at Shops with Boxing extra at cost.

3 H. P.,	$250.00	7 H. P.,	$475.00
4½ "	300.00	8½ "	540.00
6 "	400.00	12 "	725.00
15 H. P.,	800.00.		

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TILE MILLS!

Warranted Two Years!!

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DITCHING and DRAINAGE

Machines furnished at a moderate cost, cutting ditches of any desired width and depth—in ground free from stumps and rocks. Machine worked by four to six horses and two men will do the labor of fifty men a day at least. State and County rights for sale. Address

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Stone and Ore Breaker

Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c. Address BLAKE CRUSHER CO., New Haven, Conn.

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Has always on hand Dr. McClure's Ecraseur for Castrating Horses without loss of blood.

Directions how to use it will be furnished with each Instrument.

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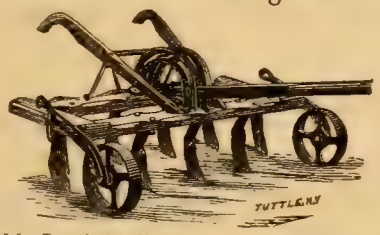
For grinding Corn and Cob, Corn-Meal, Drugs, Bones, etc. 10 sizes. For Hand or Power. Also, **French Cone-Burr Mills,** and **Cotton-Seed Hullers.** Illustrated pamphlet free. Address, SEDGEBEER & MILLER, 181 E. Front Street, Cincinnati, O.

The American Pulverizing Cultivator



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Double Harpoon,

THE BEST

HORSE HAY-FORK.

Descriptive Catalogue Sent Free.

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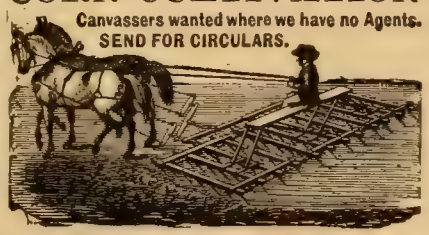
Canvassers wanted where we have no Agents. SEND FOR CIRCULARS.



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FARM MACHINERY AND SEEDS,
HARDWARE SPECIALTIES,
34 & 36 SOUTH CANAL ST., CHICAGO.

☞ FOR FARM USE.

EMPIRE PORTABLE FORGES

NO BELTS, BELLOWS OR CRANKS,
THE BEST MADE.

Send 3c. stamp for Catalogue to

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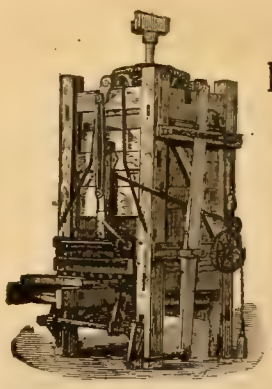
Wrought Iron Fencing

Of the Best English Make.

Can be set up with ease—is an absolute protection against cattle—is ornamental, and practically indestructible. Is superior to every other form of enclosure.

YAINALL & TRIMBLE, 147 S. Front St., Philadelphia.



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BRICK MACHINE

is conceded to be the most simple in its mechanism, and the best constructed of any in use. It grinds and tempers its own clay, does its own molding, and delivers the bricks with good square corners and well defined edges.

It is being generally adopted and used by the leading brick manufacturers. Over 200 machines in actual operation. Made and sold by the

AMES MANUFACTURING CO., Chicopee, Mass.

UNION RAILWAY HORSE-POWER

Is the best—requires much less elevation, and produces more power than others.

Send for descriptive Circular.

WM. L. BOYER & BRO., Philadelphia, Pa.

RAILWAY PITCHING APPARATUS.

Chapman's. Best Fork and Conveyor in use. Unloads and carries Hay, Grains, &c., over deep mows, into sheds, barns, &c. Saves labor, time, money. Sent on trial. Circulars sent. Agents wanted.

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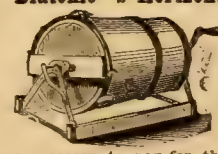
"THE BEST IN THE WORLD."

Blatchley's Horizontal Ice Cream Freezer.



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JULIEN CHURN and BUTTER WORKER.

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Send for a Descriptive Circular.

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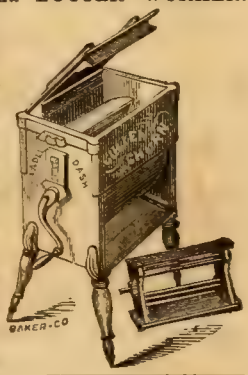

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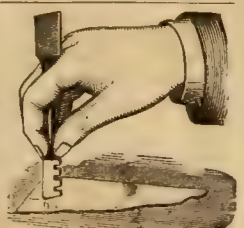

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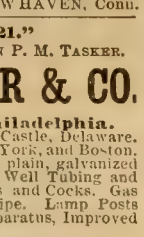

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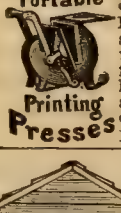

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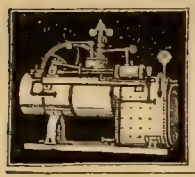

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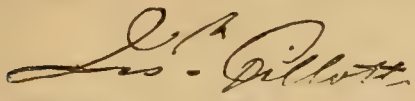

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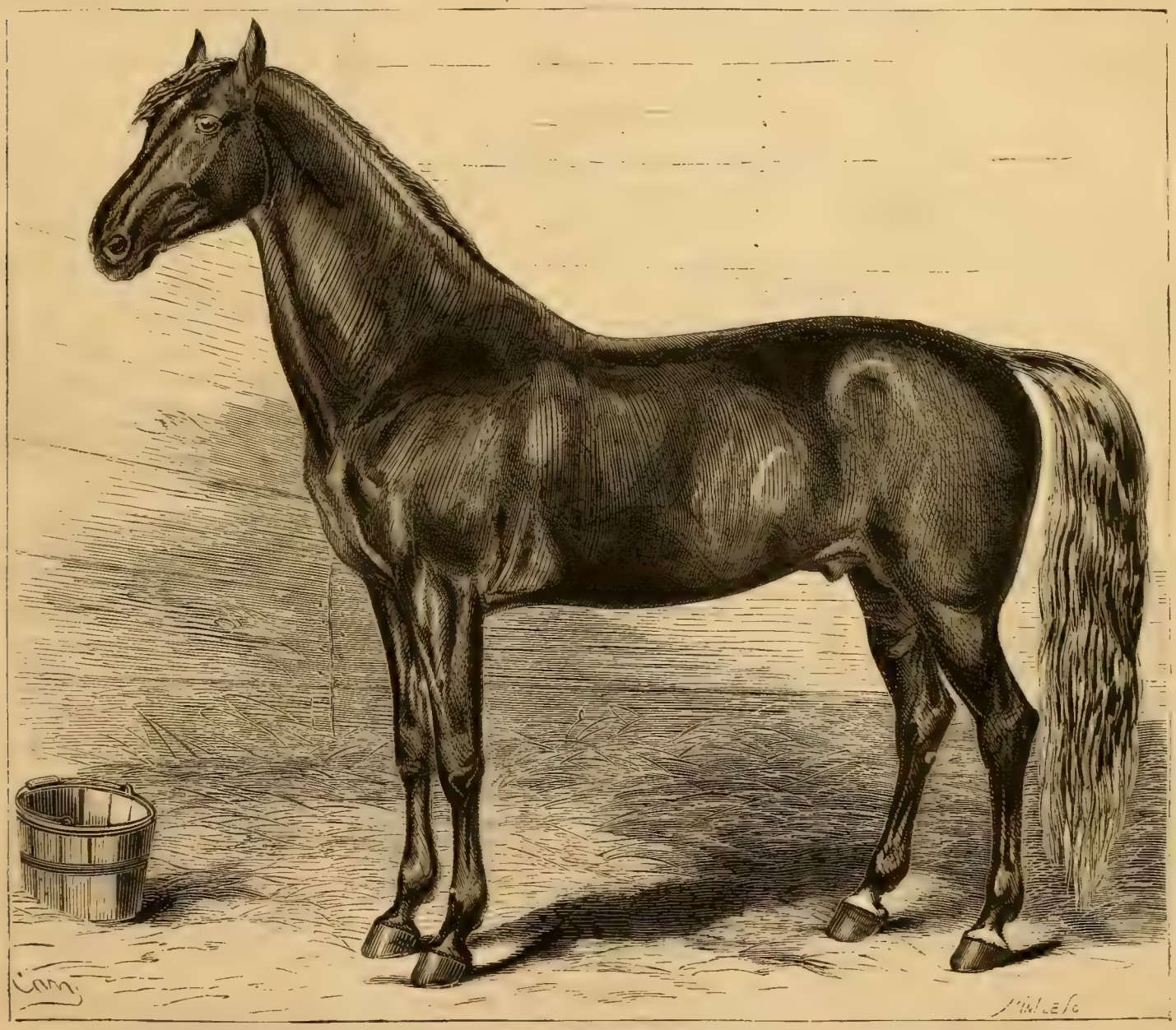

THE STALLION "NIGHTSHADE."—THE PROPERTY OF H. K. COMSTOCK, OF WHITE PLAINS, N. Y.

At the Connecticut State Fair held in September, 1874, the first premium for stallions and their colts was given to a four-in-hand-team of matched jet black stallions, consisting of "Superb," a noted trotter, and prize-winner, and his three sons, "Nightshade," "Success," and "Black Diamond." The gold medal at the Dutchess County, N. Y., Fair, in 1867, was won by "Superb" over several noted horses, and he gained the first premium at the same fair in 1869, along with six of his colts, and again the same year with five of his colts at the Queen's County, N. Y., Fair. "Superb" is by "Ethan Allen," out of "Mischief," and thus possesses a share of the blood of both the Morgan and Hambletonian families, including several crosses of imported "Messenger." His breeding is therefore very high, while his performances and character are in keeping with his breeding. He transmits his characteristics in a very marked degree to his colts, which show his excellent temper and great docility, along with his form, color, and trotting qualities. Amongst the best of his colts is "Nightshade," whose portrait, drawn from life, is given above. This horse was foaled in 1868, his dam being a highbred mare from Virginia. His color is glossy black, with a small star on his forehead, and he is nearly sixteen hands high. His form and carriage are fine, and his disposition very gentle and docile. He has a number of colts that are promising trotters, and especially suitable for roadsters or carriage horses. At the present time there is no more promising business than the production of riding, driving, and carriage horses. The demand is everywhere rapidly exhausting the supply, and the exportation of such horses to Europe would now be a profitable business if the supply were on hand. Although heavy horses may have their place in farm work, the horse for the road and for general purposes must be the progeny of a thoroughbred stallion of substance and of speed. "Superb" and his two colts, "Success" and "Black Diamond," are in the stud of Mr. James Frost, of Washington Hollow, Dutchess Co., N. Y., and "Nightshade" will spend the coming season at the farm of the owner, Hollywood, near White Plains, Westchester Co., N. Y.

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Subsoiling.—"H. W. B.," Chicago. There are lands that would be injured by subsoiling. It is only those with compact clay or gravel subsoils, that need this process. Many sandy or light loam soils, with open subsoils, are sufficiently loose, and need compacting rather than to be made more open.

Preserving Fence Posts.—"B. G.," Delaware Co. The various chemical processes for preserving timber, are all too costly for application to fence posts. They can only be economically applied when a large number are to be operated on. Posts may be made more durable by filling the holes in which they are set with large stones, so that air may circulate about the lower part of the post, and that no earth shall touch it; also if the post is washed with thick lime wash every few years. The process of painting posts with oil and charcoal dust, does not prevent decay in their interior.

Calendar for May.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon rises.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	S	4 55	7 0	2 59	4 59	6 56	2 56	5 2	6 52	2 54
2	S	4 53	7 1	3 21	4 57	6 57	3 20	5 1	6 53	3 20
3	M	4 52	7 2	3 44	4 56	6 58	3 44	5 0	6 54	3 45
4	T	4 50	7 3	4 8	4 54	6 59	4 10	4 58	6 55	4 13
5	W	4 49	7 4	sets	4 53	7 0	sets	4 57	6 56	sets
6	T	4 48	7 5	8 52	4 52	7 1	8 47	4 56	6 57	8 10
7	F	4 47	7 6	10 14	4 51	7 2	10 7	4 55	6 58	9 59
8	S	4 46	7 7	11 23	4 50	7 3	11 16	4 54	6 59	11 8
9	S	4 45	7 8	morn	4 49	7 4	morn	4 53	7 0	11 55
10	M	4 44	7 9	0 9	4 48	7 5	0 2	4 52	7 1	morn
11	T	4 43	7 10	0 57	4 47	7 6	0 52	4 51	7 2	0 46
12	W	4 42	7 11	1 30	4 46	7 7	1 26	4 50	7 3	1 21
13	T	4 41	7 12	1 58	4 45	7 8	1 55	4 49	7 4	1 52
14	F	4 40	7 13	2 17	4 44	7 9	2 16	4 48	7 5	2 14
15	S	4 39	7 14	2 38	4 43	7 10	2 38	4 47	7 6	2 37
16	S	4 38	7 15	2 58	4 42	7 11	2 58	4 46	7 7	2 59
17	M	4 37	7 16	3 21	4 42	7 11	3 23	4 46	7 7	3 27
18	T	4 36	7 17	3 44	4 41	7 12	3 47	4 45	7 8	3 50
19	W	4 36	7 18	3 59	4 40	7 13	4 4	4 44	7 9	4 8
20	T	4 35	7 19	rises	4 40	7 14	rises	4 44	7 10	rises
21	F	4 34	7 20	9 7	4 39	7 15	9 0	4 43	7 10	8 53
22	S	4 33	7 21	10 4	4 38	7 16	9 57	4 43	7 11	9 49
23	S	4 33	7 22	10 55	4 37	7 17	10 48	4 42	7 12	10 40
24	M	4 32	7 23	11 33	4 37	7 18	11 29	4 42	7 13	11 20
25	T	4 31	7 24	morn	4 36	7 19	morn	4 41	7 14	11 56
26	W	4 30	7 25	0 6	4 35	7 19	0 1	4 40	7 15	morn
27	T	4 29	7 26	0 35	4 35	7 20	0 31	4 40	7 16	0 27
28	F	4 29	7 27	1 0	4 34	7 21	0 58	4 39	7 16	0 55
29	S	4 28	7 28	1 22	4 34	7 22	1 21	4 39	7 17	1 19
30	S	4 27	7 28	1 41	4 33	7 23	1 44	4 38	7 18	1 44
31	M	4 26	7 29	2 7	4 32	7 23	2 9	4 37	7 18	2 10

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	5 10 20 mo.	10 8 mo.	9 56 mo	9 44 mo.	9 14 mo.
1st Quart	12 2 53 mo.	2 41 mo.	2 29 mo	2 17 mo.	1 47 mo.
Full M'n	20 4 8 mo.	3 56 mo.	3 42 mo	3 30 mo.	3 0 mo.
3d Quart.	28. 1 46 mo.	1 34 mo.	1 22 mo	1 10 mo.	0 40 mo.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1875.

May is a busy month. So much work crowds upon the farmer that he is in danger of being in a hurry. Hurried work is seldom well done. A certain amount of deliberation is necessary to work well, and even to work quickly. To go slowly but surely, is better than to go about a thing in a hurry, and have the work to do over again. The diligent man is industrious in making preparations before he begins to work, so that his industry may be profitable. Some of the most unsuccessful farmers are very industrious men, but their work does not tell. Every hour's work in this month, that is not done so as to be effective hereafter, might better have been left undone. That which is most urgent and important, should be done first. Planting and sowing will occupy the month, and to do this well is the most important business of the farm, because as we sow, so do we reap.

Hints about Work.

Feeding Cattle.—Beeves that have been fed for market, should now be finished off as rapidly as possible. The appetite will be stimulated by a few roots along with the dry fodder, and some exercise in a dry yard. The change of coat is accompanied by irritation of the skin, and the curry comb and brush should be used daily.

Root Crops.—Mangels and sugar beets are valuable for stock of all kinds, and a few acres should be sown this month. A deep rich soil should be chosen, and be broken up well, and manured with 20 loads of barn-yard manure to the acre. Lay off the surface in ridges 27 to 30 inches apart, roll or rake the ridges, and sow the seed with a hand-drill, at the rate of 5 pounds per acre. The middle of the month is the proper time in the northern states. A sprinkling of superphosphate of lime or guano, will help the young plants. A thousand bushels of roots, per acre, may be expected on rich soil with good care. Carrots may be sown this month for a field crop; two pounds of good fresh seed per acre is a proper quantity.

Corn.—Corn planting is on many farms the great work of this month. Plow deeply if the soil is deep, but shallow soils will not stand deep plowing. Harrow, mark out, and plant as soon as the ground is plowed; these operations should follow one another as closely as possible. Choose sound well-ripened seed, from ears that have been selected and kept for this purpose. Reject all moldy seed. To keep away birds, some steep the seed in warm water, in which a little pine tar has been stirred, and dry in plaster before planting. If the seed is sown with a drill or planter, it must not be soaked.

Crows and other Birds.—Crows are not so black as they are painted. On the whole they do more good than harm. While they will damage some corn at this season, they are working for the farmer the rest of the year. To poison them is a great mistake, as well as an unnecessary cruelty. Keep them out of the fields of sprouting corn, by scare-crows or any other devices, but their lives should not be sacrificed by shot or poison. The same will apply to the majority of birds. Even owls and hawks do some good, and there are methods of preventing them from doing mischief on the farm, without slaughtering them indiscriminately.

Grain Fields.—Fine fertilizers of any kind may be applied to winter or spring grain. Wood-ashes, poultry droppings, plaster or guano, are all valuable at this season.

Meadows.—Do not pasture meadows. There is nothing gained by it. It would be more profitable to buy hay or roots, than to do this. Any of the fine fertilizers before mentioned, are as applicable to grass as to grain crops.

Roads.—This is the best time in the year to repair roads. The surfaces of holes or gullies should be worked over with the pick and loosened before fresh earth is laid on; the union of the old and fresh earth is then more complete. Round up the center of the road, and lower the side ditches; a wet road can never be kept in good condition.

Mowing Machines.—On rainy days it will be well to overhaul the mower. Take out all the bolts, clean all the moving parts and gears with kerosene oil, then oil them with pure lard or sperm oil, and replace the bolts, first putting some clean tallow on the screw-threads of the bolts and nuts. When all is clean, throw a barn sheet over the machine, to keep it free from dust. Scythes may be ground up and prepared for next month's work, and hay rakes supplied with new teeth. Any tools or machines that are to be procured, should be looked after now. Consult the advertising columns for information as to the makers' and dealers' names.

Manure.—Nothing that can add to the manure pile, should be wasted. Cattle yards should be raked over, and the droppings removed to the pile every day. Let no stable manure remain scattered and exposed to the sun and rain.

Potatoes.—Early potatoes should be put in at once. Plant shallow, and earth up as soon as the sprout appears; if frost is feared, cover up in the afternoon with an inch of fine soil. Plant good sized ripe seed, and give small potatoes to the pigs.

Poultry.—Fowls will do well anywhere but in the garden. Provide coops that may be closed at night for young chickens, and keep them closed until the dew is dried from the grass. Cold and damp are the causes of more fatality among chicks, than any other evils. Young ducks are excellent to destroy insects in the garden; a hen or two cooped with broods of ducklings, will do more good in this way, than almost any other remedy, and they are self-acting.

Swine.—Hogs are scarce this season. There will be a demand for light pigs next fall, and if a good thoroughbred boar has not been secured, no time should be lost. A newly farrowed sow will take the boar in three days after pigging. She will go sixteen weeks, and pigs may be looked for in September. The pigs may be made to weigh 100 lbs. by Christmas. Spring pigs, if pushed now, and kept on good clover pasture during summer, may weigh 200 lbs. by winter. A sow is simply a farm machine for the production of pigs, and should not be kept idle, and as with other machines—keep only the best. See article on page 176.

Sheep.—Ewes with early lambs, if not to be kept for breeding, should be kept well fed, and separated from the lambs as soon as there is good grass. The lambs should have a little extra food during

weaning. Wean the lambs gradually during a week or ten days.

Sundry Matters.—If the spring clearing up has been delayed, it should no longer be put off. All earth, manure, or waste that may lie against buildings, should be removed from about the sills. In whitewashing, the sills should have a double allowance; lime is a preservative of timber. Make everything around the dairy as sweet as possible, plant vines or climbing plants for shade, and use plenty of whitewash inside and out. Don't forget the stock. Now is their harvest season, and they must repay the cost of their winter's keep. Cleanliness everywhere should be made imperative. See that no drain discharges, or any cesspool or filthy matter of any kind exists within fifty feet of the well. Rise early and go to bed early, and wash the body every night with tepid water, before retiring.

Work in the Horticultural Departments.

Spring work has come with a rush this year, and he is fortunate who has everything in readiness to meet it. March was so cold and stormy that in the northern states very little out-door work could be done before the first week in April. These notes will reach most of our readers as they are busy with plowing and planting, and as but little time can be spared for reading, such hints and suggestions must necessarily be brief and to the point. The careful manager will see that work is provided indoors for rainy days, so that there will be no excuse for hands to stand idle.

Orchard and Nursery.

Planting, except in northern localities, should be finished by the first of May, but trees which were properly heeled-in last fall can be set until the middle of the month, or later. Young trees will often be bent out of line by the strong winds which generally prevail at this season; if any are thus displaced, re-set if not too far advanced; at all events, bring them into their proper position by the use of stakes, or what is better, one or two large stones placed over the roots, which will hold the trees in place, and besides answer the double purpose of a mulch, and keep the soil under them moist. Small trees, such as should be preferred for planting, will seldom be blown out of position if properly set at first. Before dry weather comes, give a mulch of hay or straw to newly-planted trees; this will prevent much loss. Young orchards should be cultivated until the trees are of good size, and if crops are planted, use manure and keep up the land; many prefer to keep the soil plowed, even in bearing orchards. Seeding with clover and pasturing sheep is good practice.

Grafting.—If cions were cut last month, they may still be set, but do not cut them after the buds have started; rub off all shoots which start from the stock below the graft.

Root-grafts if not yet out, should be planted at once in nursery rows, allowing room enough between the rows to cultivate with a horse. Press the earth firmly around the roots to exclude air and prevent drying.

Tree Seedlings must be carefully weeded, and the soil around them loosened to encourage a quick, vigorous growth. Some need shading, especially during the first year of their growth; this is very necessary with evergreens, and may be done by a lattice work of lath, sufficiently raised from the ground to allow the air to circulate freely around the plants.

Insects.—Constant war must be made upon all injurious insects, as they appear from week to week. See last month's notes under this head.

Fruit Garden.

Strawberries.—Cultivate the soil between the rows, until the plants show signs of flowering, when a thick mulch of straw or hay ought to be given to keep the berries from contact with the earth. The few weeds which force themselves through the mulch can be easily hand-pulled.

Currants.—Plant out cuttings if not already done. Pruning should have been done long ago, but rather than leave old bushes crowded, we would even now thin out to allow the sun and air to reach the center of the bush. If the "worm" appears, use powdered hellebore; a convenient tin box for applying it is given on page 187 of this number.

Grapevines are sometimes taken from the trellises in the fall, and left covered until late in the spring, after all danger of frost is over. With those treated in this way, great care must be used in replacing them not to break or injure the young shoots if they have started. Newly planted vines should have but one shoot allowed to grow.

Blackberries and Raspberries.—Stop the growth of new canes when they are 5 feet high, and tie to stakes. All old fruiting canes ought to have been cut out in the fall. If any remain, remove them. A heavy mulch is of great benefit in keeping down all weeds and preserving the moisture of the soil.

Kitchen Garden.

So many little matters must be attended to, and so many kinds of seeds require sowing at the same time, that unless advantage is taken of every favorable day, the work will soon run behind. If labels or stakes were prepared during the winter, and seeds were provided early, the foresight will tell at this busy season. Proper attention should be given to planting for a succession; with a little care a good variety of fresh vegetables may be had during the entire growing season, from the early spinach to the latest tomatoes, sweet corn, etc.

Asparagus.—When gathering, cut from the crown or stool in order not to injure other buds. Cut clean, leaving no shoots large or small to grow until the cutting season is over.

Beans.—Plant bush sorts after all danger of frost is past. Leave Limas until the soil is well warmed.

Beets.—We give the plants of the first sowings a partial thinning, and a final thinning when the young plants are large enough to use as "greens."

Cabbage.—The early crops require the hoe and cultivator to be kept freely at work; it will tell in the extra fine heads. Set out plants from the hot-bed and cold-frame wherever there is room for them. Sow seeds in open ground for late crop.

Carrots.—Thin out as soon as up and large enough to handle. Sow seeds for winter crop.

Cucumbers.—Set out plants which have been started in hot-bed, and protect at night with boxes or glass hand-lights. Sow seeds in the open ground when it becomes warm and dry.

Corn.—This is one of the most popular of all vegetables, care should be taken to plant so as to have a succession throughout the season. Plant as soon as all danger of frost is over.

Egg Plants.—Do not set in the open ground until settled warm weather. Plants raised in hot-bed should be transplanted to other frames or potted off singly where they can be sheltered at night.

Sweet Herbs.—For directions about sowing, see last month's notes.

Leeks ought to have been sown last month, but if omitted, sow at once; thin out the plants if well up to two or three inches in the row.

Lettuce.—Keep the plants already set well cultivated; set out from hot-bed for a succession, and sow in open ground for late.

Martynia.—Sow seeds in hot-bed and transplant when the weather is warm. The green pods of this make a fine pickle, but they must be taken when very young.

Onions.—The hoe must be kept in frequent use, and hand-weeding follow, or else the weeds will choke out the young plants. Thin if too thick.

Melons and Squashes must be treated as recommended for cucumbers.

Parsley.—Sow seeds in open ground, and transplant those sown in hot-bed. The seeds require several weeks to vegetate.

Peas.—Sow for second early; see March notes. Give brush as soon as two or three inches high, and before the vines fall down. The dwarfs need no brush, and may be planted in single rows two feet apart, wherever there is room. In hoeing, earth up a little around the plants.

Peppers are of the same character as egg plants in requiring plenty of sun and heat, and should not be set out until both can be had.

Potatoes.—Hoe and cultivate the early plantings, and plant for late crop at once.

Radishes.—Sow every week or oftener for a succession. If insects appear, dust with plaster or road dust, while the dew is on.

Rhubarb.—Plants set last spring should have all their leaves to strengthen the root for next season. Keep the flower stalks cut as often as they appear.

Salsify should be sown early this month, if not already attended to, and the rows kept clean.

Spinach.—Sow seeds for the second crop. Keep the early planting well weeded and hoed.

Tomatoes.—Plant out when all danger of frost has passed, and give some support to the plants as soon as large enough to require it, and always before they fall over. A drawing of a trellis is given in the April number of the *Agriculturist*, which is both cheap and durable. If no trellis is used, brush for the vines to lie upon is better than nothing, and put down a mulch of hay or straw to keep the fruit from contact with the soil.

Turnips.—Sow seeds for second crop. The early sowings must be kept clear of weeds, and the young plants dusted with lime or plaster to prevent the attacks of insects.

Tools.—A full supply of the best made tools is indispensable in a garden, and they should be always in order. A sharp spade or hoe makes the work easier, and it is better done than with a dull one. If the steel parts are kept free from rust, they will last longer, and be much more servicable. Always see that each man puts his tools in their proper places when he stops work, and also that they are properly cleaned.

Flower Garden and Lawn.

Lawn.—This ought to be put in order at once, if not already done. Top-dress with finely ground bone, ashes, or other fertilizer that is free from weed seeds. The best time to apply guano or nitrate of soda, is just before a rain. Sow grass-seed in spots where the turf has been winter killed. Well established lawns should be mowed every week, and the grass left to protect the roots from the hot sun. For more specific directions, see last month's notes.

Flower Beds should not be planted with things from the greenhouse until the weather is warm and dry. Plants should be gradually hardened off before they are set in the open ground; this may be done by leaving the ventilators of the greenhouse, or sashes of the hot-bed, open at night, unless it is too chilly. Some of the hardier varieties of annuals may be sown or set out now.

Perennials should be divided before much growth is made. Seedlings raised in boxes, should be transplanted early, so that they may become established before the warm dry weather of mid-summer. Keep established beds free from weeds, and the soil loose around the plants. Many seedlings can usually be found around plants which flowered last season; these can be easily transplanted into rows, where they will soon make good flowering plants.

Climbers.—The woody sorts like Wistaria, Akebia, Clematis, Loniceras, etc., should be trained to their trellises or other supports, before the buds start. Sow annual sorts—Sweet Pea, Cypress Vine, Canary Bird Flower, etc., where they are to remain.

Tuberoses, in northern localities, must be started in the greenhouse or hot-bed before planting out, or else they will not flower before frost.

Dahlias should be started the same as Tuberoses, and when the buds push, divide the clumps.

Bulbs of Lilies, Gladioluses, etc., may be set in rich soil now.

Cannas do better if started before planting. They are most effective when planted in a mass on

the lawn, but even a single plant of a good variety will make a fine show.

Castor Oil Plants give a garden a semi-tropical appearance, but in order to secure an early effect, they must be started in heat, and when a foot or more high, transplanted.

Succulents if planted by themselves, will make a most effective bed during the summer, and if one has a good assortment of varieties, they may be arranged very artistically.

Hardy Ferns.—If there is a spot on the place adapted to the growth of these interesting plants, the neighboring woods and shaded banks will furnish abundant material at very slight cost.

Wild Plants.—Very beautiful wild flowers are to be found all over the country, and many of these may be removed to the home garden with a little care. They may be marked when in flower, and then taken up in the fall; if shrubs, they ought to be cut back severely, to compensate for the loss of roots in digging. With these, none, however poor they may be, if they have a bit of garden, need fail to make their homes attractive.

Greenhouse and Window Plants.

Oftentimes the entire collection of plants is removed from the greenhouse during the summer, and consequently many are lost by cold storms, or from drying winds. It is safer to keep tropical ferns, and choice tender plants generally, in the greenhouse, which should be kept attractive during the summer.

Shading must be provided either by muslin screens, or the glass must be whitewashed; in small greenhouses, the first is the most convenient.

Water and Ventilation should both be freely given, but currents of air through a house, soon dry up the soil and injures the plants, and are to be avoided.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending April 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	242,700	601,200	1,782,000	9,000	207,000	529,000
23 d's *last* m'th	264,000	673,000	2,327,000	4,300	205,000	623,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	397,000	2,910,000	2,686,000	61,000	315,000	1,763,000
23 d's *last* m'th	331,000	2,321,000	2,763,000	28,000	297,000	989,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	242,700	601,200	1,782,000	9,000	207,000	529,000
24 days 1874	296,000	1,317,000	2,673,000	6,900	131,000	794,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	397,000	2,910,000	2,686,000	61,000	315,000	1,763,000
24 days 1874	258,000	2,104,000	2,316,000	39,000	239,000	1,097,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush	*Oats.* bush.	*Malt.* bush.
Apr, 9, 1875	1,701,929	2,394,967	27,531	101,961	786,260	194,771
Mar. 8, 1875	2,665,775	2,274,614	45,756	231,071	854,601	154,978
Feb. 8, 1875	3,269,000	1,408,485	50,899	266,928	945,137	137,120
Jan. 11, 1875	3,675,122	1,019,900	50,889	191,470	877,014	145,647
Dec. 7, 1874	4,513,396	1,220,973	15,925	168,391	890,899	135,622
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	794,722	135,882
Nov. 10, 1873	1,720,338	3,133,896	22,507	232,912	775,153	82,674

4. *Exports from New York, Jan. 1 to April 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875	491,415	4,856,892	3,249,570	33,063	90	33,084
1874	612,380	7,330,021	3,048,833	254,310	—	39,581
1873	293,813	1,050,712	3,182,533	1,004	11,830	6,162
1872	217,804	1,873,515	3,579,949	179,320	—	8,730

Gold has been up to 117, and down to 114¼, closing April 12th at 115⅜, as against 115¾ on March 12th..... A much improved demand has been noted for the leading kinds of domestic produce, since our last, at generally stronger prices. The export movement has been more liberal, chiefly in shipping grades of flour, spring wheat, and mixed corn. Considerable speculative inquiry has been reported toward the close for wheat, corn, oats, and hog products....Flour has been freely purchased at advanced rates. The dealings in wheat, corn, and oats have been extensive, with values closing very firmly. Barley has fluctuated widely, and left off heavily. Rye has been scarce and wanted at quoted rates....In the provision line, hog products have shown unusual activity and buoyancy. Beef firm, but quiet. Butter in rather limited demand, and quoted lower. Cheese steady and moderately active. Eggs unusually variable as to price, on a less satisfactory trade....Cotton has been quite active, but irregular in price, closing in favor of buyers....Wool has been quoted steadier on the later dealings, which have shown more animation....Hops, hay, straw, and tobacco have been moderately sought after within our range.... Seeds have been in better request, especially clover, which closed stronger in price.

CURRENT WHOLESALE PRICES.

	Mar. 13.	April 13.
PRICE OF GOLD	115 3-4	115 3-8
FLOUR—Super to Extra State	$4 40 @ 5 85	$4 60 @ 6 00
Super to Extra Southern	4 60 @ 7 50	4 60 @ 8 00
Extra Western	4 90 @ 8 00	5 00 @ 8 25
Extra Genesee	5 25 @ 6 50	5 40 @ 6 75
Superfine Western	4 40 @ 4 90	4 60 @ 5 00
RYE FLOUR	4 00 @ 5 10	4 25 @ 5 25
CORN-MEAL	3 50 @ 4 75	3 90 @ 4 80
WHEAT—All kinds of White	1 25 @ 1 35	1 30 @ 1 42½
All kinds of Red and Amber	1 07 @ 1 27	1 15 @ 1 32½
CORN—Yellow	85½@ 86	94 @ 96
Mixed	81½@ 86	93 @ 95
White	85 @ 86	94 @ 96
OATS—Western	66 @ 70	72 @ 77
State	66 @ 70	73 @ 77
RYE	90 @ 96	95 @ 1 07
BARLEY	1 10 @ 1 32½	1 15 @ 1 50
HAY—Bale, ℔ 100 lbs	60 @ 1 00	65 @ 1 05
STRAW, ℔ 100 lbs	50 @ 85	50 @ 85
COTTON—Middlings, ℔ lb	16¼@ 16⅝	16⅝@ 17
HOPS—Crop of 1874, ℔ lb	28 @ 42	28 @ 45
FEATHERS—Live Geese, ℔ lb	35 @ 65	33 @ 55
SEED—Clover, ℔ lb	11 @ 11½	11¼@ 11¾
Timothy, ℔ bushel	2 80 @ 2 90	2 55 @ 2 85
Flax, ℔ bushel	2 20 @ 2 30	2 10 @ 2 35
SUGAR—Refi'g & Grocery ℔ lb	6⅞@ 9¼	7 @ 9¼
MOLASSES, Cuba, ℔ gal	35 @ 45	40 @ 45
New Orleans, ℔ gal	60 @ 70	65 @ 77½
COFFEE—Rio (Gold)	16¼@ 18½	15¾@ 18¾
TOBACCO, Kentucky, &c., ℔ lb	10 @ 28	10 @ 28
Seed Leaf, ℔ lb	7 @ 55	7 @ 55
WOOL—Domestic Fleece, ℔ lb	27 @ 62½	30 @ 64
Domestic, pulled, ℔ lb	26 @ 50	30 @ 50
California, clip	16 @ 37	15 @ 31
TALLOW, ℔ lb	8 @ 8½	8½@ 8¾
OIL-CAKE—℔ ton	44 00 @47 50	45 00 @47 50
PORK—Mess, ℔ barrel	19 50 @19 62½	22 25 @— —
Prime Mess, ℔ barrel	18 00 @ —	19 75 @20 00
BEEF—Plain mess	9 50 @10 50	10 50 @— —
LARD, in tcs. & barrels, ℔ lb	13⅜@ 14¼	15 @ 15¾
BUTTER—State, ℔ lb	19 @ 35	15 @ 30
Western, ℔ lb	15 @ 32	12 @ 25
CHEESE	6 @ 17	5 @ 16¾
BEANS—℔ bushel	1 55 @ 3 15	1 50 @ 3 00
PEAS—Canada, free, ℔ bu	1 18 @ 1 28	1 15 @— —
EGGS—Fresh, ℔ dozen	32 @ 33	25 @ 26
POULTRY—Fowls	15 @ 24	15 @ 24
Turkeys—℔ lb	15 @ 21	16 @ 22
Geese, ℔ pair	1 25 @ 2 00	1 25 @ 2 00
Ducks, ℔ pair	50 @ 1 25	70 @ 1 12
PIGEONS, ℔ pair	— @ —	75 @ 1 00
WILD DUCKS, ℔ pair	75 @ 1 75	50 @ 1 25
HARES, ℔ pair	40 @ 50	— @ —
RABBITS, per pair	35 @ 40	— @ —
TURNIPS ℔ bbl	1 37 @ 1 75	1 25 @ 1 75
CABBAGES—℔ 100	8 00 @11 00	5 00 @11 00
ONIONS—℔ bbl	2 50 @ 3 50	1 75 @ 4 00
POTATOES—℔ bbl	1 75 @ 2 75	1 62½@ 2 50
SWEET POTATOES—℔ bbl	3 00 @ 4 00	3 00 @ 3 75
BROOM-CORN	9 @ 15	10 @ 16
APPLES—℔ barrel	1 25 @ 2 00	75 @ 2 00
CRANBERRIES—℔ bbl	2 25 @ 9 50	2 25 @ 9 50
GREEN PEAS, ℔ bushel	1 90 @ 2 10	2 20 @ 2 50
GREEN PEAS, Florida, ℔ crt	— @ —	6 00 @ —
TOMATOES, ℔ crate	— @ —	2 50 @ —

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Total.*
March 22	8,460	124	623	19,300	21,010	49,507
March 29	7,486	159	1,013	22,633	26,091	57,405
April 5	7,660	102	1,075	11,911	26,412	47,160
April 12	8,550	124	1,904	18,724	22,300	51,602
Total for 4 Weeks	32,159	509	4,635	72,568	95,803	205,674
do. *for prev. 5 Weeks*	35,925	502	3,247	109,261	130,305	279,240

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	8,010	127	1,159	18,142	23,950
do. do. *last Month*	7,185	100	649	21,852	26,051
do. do. *prev's Month*	8,456	107	697	23,870	31,986

Beeves.—An advance of ¼c. ℔ lb., at the beginning of the past month's business, and a continuously firm market, has been no help to sellers. On the whole, business is not satisfactory. Beeves have been sold here at 11c., to dress 57 lbs. ℔ cwt., which cost 6¼c. alive in Chicago. The losses to drovers have in some instances amounted to $50 per car-load. The scarcity of corn in the west makes the comparatively high price of cattle there of little benefit to feeders, and just now the consumers alone reap the advantage. This state of things may not last, for the market closed firm, with owners of cattle anxious for an advance, and hopeful of getting it. Fancy selections sold at the close at 13½c. @ 14c. ℔ lb., to dress 58 lbs. for a few, but the bulk went at 13¼c.; 10¼c. to 13¼c., was the quotable range for corn-fed natives. 2,000 still-fed cattle arriving at this premature season, has kept the market for thin cattle very dull.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
March 22	9¼@14 c.	11 @11¾c.	11¼c.
March 29	9 @14 c.	10¾@11¾c.	11 c.
April 5	9 @14 c.	10½@11½c.	11 c.
April 12	9 @14 c.	10½@11½c.	11 c.

Milch Cows.—Cows have dragged heavily through the month, and lessened receipts alone will help the market, which closed dull at $50 to $80 for ordinary to choice milkers. Fancy cows bring $90 to $100 with calf included....**Calves.**—The market for veals has been brisk at good prices. The receipt of 1904 the last week, against 1075 the previous week, weakened prices a little, but trade closed very active. Common to prime, sold for 6c. @ 10c. ℔ lb. Milk fed veals and buttermilk calves, brought 5c @ 5½c. ℔ lb., and "bobs" were worth $1.25 to $3.25 per head....**Sheep.**—The market for sheep closes fair, after a steady business at full prices; common to extra, sold at 6¼c. @ 8½c., and 5¼c. @ 6¼c. for clipped. The latter are slow of sale, and need forcing to go off. Spring lambs were sold at $7.25 per head....**Swine.**—The light receipts have advanced prices to 10¾c. @ 10⅞c. ℔ lb. for city dressed. The business closed firm and active with no live hogs on the market, all arrivals being consigned to slaughterers.

Large Pay

for a little work is very agreeable. But thousands are letting an opportunity to get *large pay* pass by unimproved. No one can look through our Premium List, without finding many *good* things—things that are worth far more than the selling value set against them. This List is a handsome illustrated sheet of eight pages, is sent *free* to all applicants, and there is not an article mentioned in it, which it would not pay well to purchase with money. But we put it in the power of those who can not spare the money, to secure one or more desired articles without cost. Many thousands have done so recently, and many other thousands can yet do the same thing

During May.

A few odd hours—spent in collecting a small number of names—will secure an article worth many dollars. Ladies are usually successful canvassers, and a number have secured first class pianos. One lady first got a beautiful Tea Set for herself, and then earned another for a friend. Sewing and Knitting Machines, Wringers, Washing Machines, first-class Watches, etc., etc., have been taken in great numbers. It can quite as easily be done

This May

by thousands of those who have premium clubs partly filled already, and by any number of others who will start *new* premium clubs. There are very few Post-offices where there are not still people enough to make up a premium club—persons, too, who would be *greatly benefited* as well as pleased by having this journal properly brought to their attention. The five beautiful and valuable numbers of this volume now issued, are to be followed by seven others—as much better as it is possible to make them. Will anybody fail to get back the value of his subscription money, many fold?

Reader,

here is a chance for you. Try your hand at getting a small club, at first, for some one of the premiums of moderate value, even if it be one of the smallest ones in the table. You will be quite likely afterwards to make it larger before sending for the premium; and if you do not, the few names secured, and the experience gained, will open the way for a splendid premium club next season.

Did It Pay?—Thirty-three years ago two farmers settled side by side, with about equal advantages as to soil, markets, etc. One of them subscribed for the *American Agriculturist*, and occasionally bought a book or two about his business, the whole costing him only $6 a year. His boys read and *thought* about their work, became interested in and *respected* it, and were happy in their toil, because they had something to think about. They grew up intelligent, and settled as good prosperous farmers, respected and influential....The other farmer "couldn't afford papers and books"; (he could afford 6 cents a day, or $20 a year, for tobacco, beer, etc.) His boys worked sullenly by day, and "skylarked" at night; they despised and hated their work, which for them was only exercising brute force, with little mind applied. When old enough to escape parental restraint, they quit the farm, one for this, and another for that, and *none* of them ever amounted to anything. Six dollars a year, or even $1.50 a year, would have made a wonderful difference—would have changed their whole course of life. Would it have paid?... Please show this item to some of your neighbors, who have perhaps not thought of this matter, and invite them to try this or some other good journal for the present year. You may do them a positive good by such a hint.

Two Months More

FOR PREMIUMS.

May and June are good months in which to fill up club lists of subscribers already begun, or to **make up new clubs, and secure a Premium.** The List will not be withdrawn until July 1st. There will be found upon this Premium List for the year 1875, a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but a little *well directed effort.* Among these are: **Beautiful Silver-Plated Articles—Fine Table-Cutlery—Gold Pens with Silver Cases—Children's Carriages, Swings, etc. Watches—Pianos — Melodeons — Pocket-Knives — Guns—Cultivators—Sewing, Knitting, and Washing Machines—Books, etc., etc.**—Send for our Illustrated Premium List, and see how easy you can obtain one or more of these good and desirable articles.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our Western Office.—Our friends in the West are reminded that we have an office at Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* are taken there, and sample copies of the paper and chromo are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

Lakey's Village and Country Houses.—This new and elegant work contains 56 designs in 84 plates, giving plans, elevations, perspective views and details of a great variety of buildings; from the simple laborer's cottage with two rooms on a floor, to the large sea-side or other villa. There is not only a wide range in the size of the buildings, but a great variety of styles, and one must be very fastidious not to find something here to please him. We are glad to see on paper what we would like to see more of in reality; houses in the construction of which the rough stones of the fields are largely used. Some churches and school-houses are given, and add to the utility of the work. Published by the Orange Judd Company. Price $6.

Trustworthy.—There is no doubt that, taken as a whole, no more trustworthy collection of business announcements was ever found together, than those that fill up the advertising pages of the *American Agriculturist.* One of the oldest and largest advertising Agents, who has to do with all the newspapers of this country, recently remarked: "No other journal, religious or secular, has for a long series of years been so persistently strict in shutting out objectionable, or even questionable advertisements, as the *American Agriculturist.* We hardly dare promise to insert any advertisement in that paper, no matter how good it is, until we have had it examined by the editors, to see if it don't have something objectionable in it. It's no use trying to get any medical advertisement in for love or money."—The publishers and editors are proud of such a statement from such a source, as it indicates the possession of a reputation they desire to be worthy of. Though they may once in a thousand times be themselves deceived in parties, they earnestly try not to be. They mean to protect *their* readers, in the business as well as in the reading columns. They also wish their readers to let advertisers know that they have a right to expect good treatment, and to secure this, it is enough to simply say, when writing to advertisers, in ordering, or sending for circulars, etc., that you read their advertisement in this journal.

High-Priced Sticks.—Some time in March Mr. Roezel, the well-known plant-collector, consigned 52 plants of a rare cycad, *Zamia Roezelii*, from Buenaventura, to Young & Elliott, Seedsmen of New York. To an ordinary observer they looked like pieces of rotten wood, but when Mr. Elliott offered them at auction, a spirited competition showed that they were "diamonds in the rough," for the smallest "chips" brought 50 cts., while larger "logs" of 18 inches in length brought $36.00 each. Mr. George Such, of South Amboy, N. J., was successful in monopolizing the rare lot, except one specimen. The aggregate value of the 52 plants was $405. They were bought mainly for exporting to Europe, where plants similar to these have commanded at retail two hundred guineas each.

The Bogardus Mill.—Numerous inquiries as to where this mill may be had, will find an answer in our advertising columns.

The Colorado Horticulturist.—A quarterly of 16 pages, published at Greeley, Col., and edited by J. F. Foster, at the low price of 50c. a year. If anything in respect to the rapid progress of "the west" could astonish us, it would be to receive a horticultural paper from a place like Greeley, which but a few years ago was unbroken prairie. Only the first number has come to our notice, but in this the editor shows good sense. Most new papers of this kind, make the great mistake of publishing articles on wonderful things abroad, or those discussing matters, interesting enough in a scientific point of view, but of no possible use to their readers. The Cororado editor wisely gives prominence to local matters, and shows that he intends to make his paper what its title indicates, the *Colorado* Horticulturist; he wisely sees that to tell his readers, as he does in this number, that certain cabbages do not succeed in Colorado, is of more value to his readers than an account of the Crystal Palace at Sydenham.

Hulless Oats.—"H. S." There has been in cultivation since very early times an oat known as skinless and naked, and in some parts of England as "peelcorn," and we suppose, from the name only, as we have not seen it, that the "Hulless oat" is the same thing. It is regarded as a distinct species (*Avena nuda*) from the common oat, (*A. sativa*), from which it differs in having 3 or 4 flowers (and grains) in the spikelet, while that has but 2. In the common oat the palets of the flower enclose and closely surround the grain when ripe, forming the hull; in the other the grain is not thus surrounded, but free. In some parts of Europe, especially in Ireland, this oat is much cultivated for making oat-meal. It was tried in this country many years ago, and is offered every now and then as something new and wonderful. So far as we are aware it has always degenerated; had it been of any practical value, it would have kept its place among the generally cultivated grains. You ask if this oat is a "humbug." So far as there being such an oat, no; but the claims made for it are such as we are quite confident experience will not sustain, and as to paying a dollar a pound for a grain that is so common abroad as this is—if people do it, it will not be by *our* advice.

Mowing-Machine Knives.—The effect of a dull knife is to increase the labor of cutting grass 25 per cent. With a dull knife half of the force of one of the horses of a team is totally lost. In a day's work this loss equals the cutting of two acres of grass. In fact two acres more of grass a day may be cut in a day with sharp knives than without. Five minutes work twice a day with a good hand-sharpener will keep the knives in good condition. The "rhomboidal harvester sharpener" made by Youse & Co., of Bryan, Ohio, fits the knives of a mower exactly, and sharpens them perfectly. It is held in the hand just as a "rifle" or whetstone for sharpening a scythe, and may be used while the team is resting.

Moss and House Plants.—Mrs. G. R. Percy. If the soil is in proper condition, no harm will be likely to come from covering the surface with moss from the woods. The soil of house plants often becomes what the gardeners call sour, from being too compact, and the drainage imperfect or lacking altogether.

N. Y. City Suburban Homes—Cost of Reaching Them.—The number of people residing in the country or neighboring villages, who go to New York City daily to engage in business for themselves, or others, is very large. There are at least a dozen Railroads that furnish good and rapid facilities and commutation tickets. In comparing the rates on these railroads, we find the average cost of travel, allowing the commuter to go each way 300 times a year, to *average* about as follows for each mile traveled. Those residing 10 miles from the city pay 1 cent per mile. Those living 20 miles distant, pay $6^5/_6$ *mills* per mile. At 30 miles miles distant, $5^1/_3$ *mills* per mile. At 40 miles distant, $4^3/_4$ *mills*, and at 50 miles distant, $4^3/_5$ *mills* per mile.

Book on the Horse.—"A. C.," New Haven, Mo. Dadd's Reformed Horse Doctor, will be found a very useful book for any one who keeps a horse; it treats on the management of a horse, its anatomy, its diseases, and the treatment and medicines proper for them. The price is $2.50.

"Thoroughbred," and "Full Blood."—"J. F. L." There ought to be no distinction between these terms, they mean the same thing. Either means the progeny of animals on both sides, that are accepted as thoroughbred, and are entered in the various herd books. Animals may be entered in the English Short-horn Herd Book, that have four crosses, that is, that are descended directly and consecutively for four generations, from herd book or thoroughbred bulls, but in this country such stock would be considered only as high grades, or having fifteen-sixteenths of full blood. They are not in reality full blood, and how many crosses constitutes a full blood, has not yet been settled here.

Hints about Work.—Scores of enquiries as to matters about the farm, orchard, and garden, are answered in the hints about work, given in the *Agriculturist* every month. These "hints" are very carefully studied, and are intended to include all the important work to be done in the month. In the present month will be found information about rolling ground, barley, oats, fodder-crops, and many other matters in relation to which we have many letters now before us, and to which we can not give separate replies.

How to Grow Flax.—"J. B. B.," Mapleton, Kansas. Flax is a good crop for rich bottom lands. When grown for seed, one bushel per acre is enough, as it then branches and yields more grain. It should be sown as soon as danger from frost is over, and may be harvested with the reaper when the seed-bolls begin to turn brown. It may be threshed in the ordinary machine, and cleaned in a sieve made purposely for it. There is no more labor about it when grown in this way, than with a crop of oats. It leaves the ground in good condition for fall wheat.

Apple Pomace for Manure.—"E. W. S." Apple pomace is not worth anything as manure until it is thoroughly rotted. It is then worth about as much as ordinary swamp muck.

Make Home Beautiful.—Read the advertisement on third cover page of this number, "Beautiful Pictures, and How can I get one of them?"

Effect of Food upon Milk.—"J. S. C." If one would think but for a moment, there would be no need to ask if a cow well fed will produce more butter than one poorly fed. The butter comes from the food and nothing else, and the better the food, the richer the milk. Read the articles on "Science Applied to Farming," in the *Agriculturist* for the present and the past four months, for valuable hints on such matters.

Floor for Basement of a Barn.—"S. L. R." A cement floor for a barn basement, is preferrable to a plank floor. It is cleaner and harbors no vermin. A paved floor is described in the *Agriculturist* of November, 1873, which we have found to be the best for this purpose, as it is clean and permanently durable.

The Value of Timber Lands.—"Amateur." There is a large scope for profitable settlement in the timber lands of Michigan, for those who do not dislike the labor of clearing the land. Timber is now so valuable that in almost any locality it can be sold for enough to pay the cost of clearing and fencing. A new beginner could not expect to cut more than half a cord of wood a day at first, he will soon be able to cut one to two cords a day if he is industrious, and the wood is of fair quality The best crops at first are wheat for two years, and then grass until the stumps rot out.

Ventilation of Stables.—Proper ventilation does not consist in wide cracks in the doors, nor holes in the walls, which let in a stream of cold air upon the animals. Unless there is ample space above, to allow the impure air to escape, the stable is filled with eddies and currents below, which are injurious to cattle. Ventilation should be by means of many small spaces, which admit numerous small streams of fresh air. If there is an open space above the cattle, these small streams intermingle without causing any perceptible draft of cold air. Proper ventilation consists in having the air within in exactly the same condition as it is without; pure, fresh, abundant in quantity, and equal in quality, so that the air that the animals breathe is as pure as that which flows about their feet and legs.

Stray Cattle.—"W. W." If farmers or stock men would use the ear marks or labels made by C. H. Dana, of West Lebanon, N. H., which cost only 5 cents each, there would be no stray cattle lost. These labels may be stamped with the owner's address, and being of metal, will not wear out. Cattle bearing these labels, carry their owner's name and address wherever they go, and the fact of their straying can be sent to him by a letter or postal card.

Windmills.—"J. G. P." The best windmill we know of, is that made by the United States Wind-engine Co., of Batavia, Ill. They are made of all sizes up to those powerful enough to work two or more sets of mill stones.

Jerseys for Cheese.—The Winthrop, (Maine), cheese factory, during a season of 83 days, averaged only 8.07 lbs. of milk to a pound of cheese. The milk was chiefly that of Jersey and grade Jersey cows. The cheese was also of high quality. We have heard of no other factory that averaged much less than 10 lbs. of milk to a pound of cheese. The three best cows whose milk went to this factory, were pure Jerseys, and yielded from 35 to 37½ lbs. of milk per day. It has been generally supposed that Jerseys were useless for the cheese dairy, but this success will doubtless encourage other tests.

Color of Ayrshires and Alderneys.—"P. L. F." Alderneys and Jerseys are distinguished from Ayrshires, by their slighter form; a fawn or mouse color, either solid or mixed with white; slender horns; black or mealy muzzle, with a yellowish ring around it, and around the eyes; large eyes; slender neck and deer-like head; while Ayrshires are generally white and red, larger in the body, coarser in the horn, neck, and head, and white about the muzzle.

Salt or Plaster.—"J. W. K.," Ontario. It is doubtful if salt is of much use except under special circumstances, which can only be discovered by experimenting. Plaster is far more widely useful, and should be used on peas in preference to salt.

Adulteration of Cheese.—Nothing is more surprising or more censurable than the recent attempts at some of the Dairy Conventions, to familiarize dairymen with the knowledge that cheese may be adulterated with a preparation of tallow. There is scarcely anything made that may not be adulterated, if it is not already. The substance known as oleo-margarine, which is simply the liquid part of animal fats or tallow, is mixed with skimmed milk, and a cheese made from the mixture which competes with honest cheese from the whole milk. The knowledge of this fact should be sufficient to raise a united protest from all dairymen, against the sale of this stuff as a dairy product. The simple knowledge that such a compound is made, must put consumers of cheese on their guard, for they well know that if cheese is now adulterated with tallow, the tallow in its turn will soon be adulterated with something cheaper yet, and this may be the product of rendering establishments where dead horses and offal are worked into grease. Then no one will eat cheese, and the dairymen will have killed their business for the sake of a few dollars. The true course for the dairymen, is to procure a law to compel such cheese, and what is known as butter made from this stuff, to be sold under distinct and conspicuous brands, which shall represent exactly what they are. It is to the interest of the dairymen, who must suffer seriously from this competition, to do this. Those leaders of this industry, who have so far been misled as to give an endorsement and favorable opinion of the manufacture of sophisticated cheese, will surely regret it when the inevitable injury to their business begins to be felt. Food must be above suspicion of adulteration, and to unguardedly announce to the world, the fact that adulteration is not only easy and cheap, but advisable, is one of the greatest possible mistakes. We are glad to notice that the Ohio, North Western, and Maine Dairymen have set themselves in opposition to skimming milk for cheese, and of course these are not the men to bring oleo-margarine into their dairies.

Tar for Shingle Roofs.—"S. P.," Dutchess Co., N. Y., says in 1834 a shingle roof that had been laid in 1803, became leaky, and was treated to a coat of boiling hot tar, with a common broom, and then sanded. The roof is now in good order.

Poultry Diseases.—Gapes, cholera, and other diseases of fowls, are caused solely by want of cleanliness, by dampness, improper food or water, ill ventilated houses and vermin. Fowls can not take care of themselves, even if supplied with unlimited food, but will become affected with all those ills that ail wild fowls. But with skillful management they may be kept for years without any disease whatever. Fresh ground is necessary to cleanliness.

Paints for Tools.—"G. W. S.," Ulster Co., N. Y. White paint is simply white lead ground in oil, and when used diluted with boiled linseed oil, until thin enough to spread well. If a dead white is wanted, turpentine is used in place of the oil, or equal parts of each. Colored paints are made with white lead for the basis, and sufficient red lead or venetian red for reds, Prussian blue for blue, Brunswick or chrome green for dark and light green, and raw or burnt umber, or raw or burnt sienna for the various browns. These are added to the white lead in sufficient quantities to make the required color. For outbuildings and tools, crude petroleum, costing 15 cents a gallon, will make a dark brownish color, which is not unsightly, and is a good preservative, but it is not a paint.

SUNDRY HUMBUGS.—As we look over the budget of humbug documents, it seems surprising that people are content to plod along year after year, the majority getting scarcely more than a living, when there are so many ways by which one can get rich at once, by making a very small investment,

THE AVENUES TO WEALTH

here pointed out are so many that one is puzzled which to take, as each promises to be shorter than the other. He must be a poor fellow who cannot raise the few dollars required to pay the toll. If farmers will be so foolish as to follow farming, why do they not get some of the wonderful wheat and oats, the compound to make butter, and the fruit-growing stuff; and as for a long life, if that is desirable, or if one wishes health while he does live, here are no end of remedies. Long life, health, wealth, profound knowledge, and many other desirable things are offered, and *if* the statements are true, within easy reach of all.

"THERE'S VIRTUE IN AN IF."

There is nothing new in all these things; the same hopes of easy acquirement of wealth, health, and other desirable things were held out before any of us were born, and if reference be made to our humbug articles of ten years ago, it will be seen that precisely similar inducements were offered then, though under different forms and names. A reference to the earlier records will show another thing,—that none of the enterprises apparently so flourishing then, are in existence now, with the exception, it may be, of a very few medical humbugs. That these things should in one form or another be always before the people, is explained by the melancholy fact that there is always and everywhere a large class who are not only willing, but desirous to be humbugged. It is one of the strange phenomenon of human nature, but it is as true that certain men are constitutionally gullible as it is that others are naturally shrewd. It is upon this gullible class that these various swindling enterprises subsist; and upon these we do not expect our exposures of humbugs will have the slightest effect. If swindled by one scheme, they are just as ready for another. Strange as it may seem, there are men and women who pass their lives in trying one quack medicine after another, and that they still live is strong evidence of the general inertness of these compounds. We have no hope of changing these confirmed cases, but our aim is to warn the unsuspecting, those who, guileless themselves, do not distrust the motives of others; the young whose imagination being excited by plausible statements do not sufficiently reason upon them as to see the impossibility of their truthfulness; and those who by adversity have been brought into that desperate state of mind that leads them to catch at anything, however wild and improbable, that promises relief. It is to these and to similar classes that our warnings are addressed, and the many assurances on all sides that our exposures have been of the greatest benefit, especially in rural communities, induce us to continue in the course that the *Agriculturist* was the first to adopt, and expose the numerous swindling schemes however small they may be; indeed it is really more important to our readers that they should be warned against the minor swindles than the larger ones, which can only defraud capitalists. As an illustration of the many schemes for

MAKING MONEY EASILY,

a catalogue now before us is a good illustration; it is published in that flourishing manufacturing place, Newark, N. J., but as we do not advertise this kind of trash, we do not say by whom. It is a "Catalogue of Books and valuable Money Making Discoveries." Here is a "Book of Secrets" which is a "complete guide to wealth," which will teach any one to make $3,000 to $10,000 a year. If one doesn't fancy that, he can get the "New Secret Art of Making Money whereby $5,000 to $10,000 can be made annually, or if artistically inclined, '$1,000 every month' can be made by the great English Art of Making and Drawing Oil Paintings." But these and others are nothing to "The Greatest Discoveries of the Age—Pays better than a Gold Mine. $1,000 to $3,000 per day" !!! "An easy, certain, and quick way to get rich within the Reach of All," and it all costs only $6. The business is one that perhaps every one would not like to engage in, as it is the making of artificial brandy, whiskey, and other things which are bad enough in their pure state. No doubt these books have a considerable sale, and it never occurs to those who buy the "secrets" to make money readily, that if they had really any value their possessors would not part with them at a dollar a bookful, up to $6, for the liquor stuff. Selling these books cannot be so very remunerative—certainly nothing like the $1,000 to $3,000 per day which they assure others can be made by preparing, what is in the slang of the day called "rot-gut" and "40-rod whiskey."....In the spring we always expect a set of humbugs expressly to

CATCH FARMERS AND GARDENERS,

and we have a few at this time, though probably because it is a backward season they are not so numerous as they sometimes are. Among these the "compound" for making butter at 4c. a pound seems to be perennial. The amusing thing about this circular is the claim that the "compound" is the result of a scientific discovery, while science teaches very plainly that there is only just a given quantity of butter in a pound of milk, and no hocus-pocusing will get any more from it....All insects are hereby warned that their lives are short, as a man in Ohio has gone and invented a "Socotra Insect Destroyer and Tropical Fruit Producer," and he tells how to do it for $2, only you must sign "a bond" not to divulge, and all that, as the "right to this discovery is absolutely secured to me by law." Now, Mr. insect man, what do you mean by that? The stuff isn't patented, if it were, every one who chose could get a copy of the patent by paying the usual fee; so what is the use of talking about the "law." We advise no one to invest in any preparation for destroying insects unless it is backed up by well known names. In Ohio there are many well known fruit-growers whose endorsement would carry great weight. We know nothing about this man's "destroyer," but we think his circular and its talk about the "law," deserves a place among the humbugs....There are as usual several seeds offered with the most

HIFALUTIN DESCRIPTIONS,

and this is a class of subjects that it is very difficult to treat properly. For instance, there is a so-called "Japanese pea," widely advertised, and in some instances the most extravagant claims made for it. The pea itself is, to begin with, nothing new, and as to its being "the finest pea grown for the table," that is simply bosh. Were this a good table pea, the small size of seed and pod, and the hairiness of the pods would be serious objections. Still the pea produces a great amount of forage and grain, and no doubt will be found useful in some of the southern states, to grow for feeding stock. In this case the article evidently has some merit, and we can not properly place it among the humbugs, but use it to show how a plant that in certain localities may be valuable, is injured by inconsiderate advertising....Japan is prolific in wonders; here is the "Mammoth Japanese Seed Corn." We have not seen this corn, but when we read among its claims to superiority over other varieties, "This corn will yield from twice to three times as many bushels to the acre, on the same soil and with the same culture," we think we will wait a bit....Then there is a new corn that claims to have come—of all places in the world—from the Isle of Wight, where they know as much about Indian corn as an Esquimaux does of pine-

apples, and what makes the matter more absurd, is that while it is claimed as superior for *mealing*, people are advised not to buy Crosby's, Moore's Concord, and other well known varieties of *sweet corn*, but get this Isle of Wight thing instead. That is rather more than people who know anything about sweet corn can swallow. These things are offered every year, and many persons invest a dollar in them just out of curiosity, and if they can afford it, we have no doubt they get their money's worth of fun out of the investment: the great harm they do is among those who test a novelty for the first time, and when they find the extravagant claims not sustained, they conclude every new thing must be a humbug, and will not try a really good thing when it is offered. Our seedsmen, nurserymen, and florists, are always on the lookout for every good and new thing, and stand ready to pay enormous prices for every novelty worth having, and it is safe as a general rule, when wonders among fruits, flowers, and vegetables are offered by peddlers, or by people in obscure villages, to wait until they have been sufficiently tested to get into the general trade.

THE CHEAP SEWING MACHINES

did not all expire with the celebrated Mulligan.—By the way, we are glad to learn that some who sent money to M., received it back from the dead letter office.—It looks as if Mulligan had more than one successor, and inquiries continue to come about cheap machines. What can we do except what we have already done?—advise our friends to go slow. Take this for an example. An inquiry comes about a cheap machine that we have not before heard of. A representative from the *Agriculturist* goes to the number. After some trouble in mounting the stairs, he finds the place to be two obscure upper rooms; one room occupied by a girl writing, with a great many envelope boxes in sight, but no machine. Upon a machine being asked for, the envelope boxes, which cover a box in a corner, are taken off, and a fair looking machine, apparently the only one in the establishment, taken out. Now we can not denounce these parties by name as humbugs, but the whole thing looks—well just like such a place as we would not go to to buy a machine. There are several concerns, advertising freely in papers a long way off, but not at all in those at home, that seem to be first-rate places to fight shy of. We have an eye on them, but must wait for evidence before we call names. Remember Mulligan, and be cautious!

THE LOTTERY HUMBUG,

in its different forms, seems just now to be confined to Wyoming and Texas, the state last named having three of these gambling schemes on hand at once; but then Texas is a large state. One of the Texas schemes went to a friend in Missouri, who took the trouble to calculate the chances, and concludes that as it takes a dollar to pay the managers for putting each dollar into the hands of the winners of prizes, the chances of the game are too much on the other side. If every one would investigate the absurdity of these schemes, there would be fewer tickets sold, though we would prefer that all should avoid them because they are wrong. That member of the firm of Egerton & Co., lottery dealers, Camden, N. J., is still dreaming that so and so have drawn prizes; we are afraid the fellow eats late suppers, or he would sleep more quietly.

COUNTERFEIT MONEY ENTERPRISES

seem to be about played out; they have been so thoroughly exposed by us ever since they started, and within a few years by the daily papers, and the law is so strict and so well enforced, that the operators stand a poor chance. Now and then one issues his circulars from some out of the way place, but he does not continue at it long; it is a game only successfully played in large cities. There is a fellow at Rumsburger, Pa., who is either

A FOOL OR A KNAVE,

we are not quite sure which: Here is his letter,

"Mr. Orange Jud & Co. Dear Sir i would like to know where i could get some bogas money and what it is worth and how soon i could get it i have a good chance to shove it i would want about one hundred and in 5 2 and 1 and as few a fives as posable. Yours Truly Direct to Curtis Reid Rumsbarger Clearfield Co. Pa."—There Curtis is your letter, if you like the looks of it in print we are glad of it. You are either a rascal who wants "bogas" money, or a fool who has written under an assumed name to see what we would say, probably the last, and we hope that by the time you see this, you will not feel annoyed at being pointed out as the man liable at any time to be arrested for using the U. S. mails for unlawful purposes. Are you not ashamed of yourself, Mr. "Curtis Reid"?

MEDICAL MATTERS

Are just a little livelier than they were, as we get now and then a novelty; still we don't think the business can be flourishing, for some of the dealers are trying the black-mailing dodge. One of the diamond-wearing, many named New York quacks is trying this game in Florida, and we venture to hope that he will find that climate does not agree with him. There is a chap in Pittsburgh, Pa., who has a catarrh remedy, and is at work on the same track: a person in N. Y. state received one of the Pittsburgh fellows circulars, in which he offered to send the stuff free of charge: the N. Y. man replied that he was willing to try the stuff, and it came by express with charges; New York man declined to pay, whereupon Pittsburgher sends a threatening letter, but offers to compromise and release N. Y. man from all obligation if he will send him a *list of names* of persons who have the catarrh. Rather than have any difficulty, and to settle the matter, N. Y. man paid express charges. Our N. Y. friend has at last had his eyes opened, and wishes us to warn people against accepting packages of medicines free. If our friend lives longer he will learn that no offer of this kind is made unless the one who proposes it expects to get repaid somehow. It is astonishing—but here is an evidently intelligent person who will accept a medicine about which he knows nothing, from a quack about whom his circular should be a sufficient warning. When it comes to medical matters, common sense appears to step one side.. ...Here is another case from Pa. At a place called Highville, one "Dr. Osborne" issues "The Cabalistic Journal," which presents the inducements for joining the "Cabalistic Society," which is to straighten out the crooked places in the present state of things, and do wonders generally; it costs only $5 to join this concern, which is wonderfully cheap, considering that instruction in alchemy "by which he or she can increase their wealth at will," is among the advantages gained by joining this select company of idiots. A large part of this circular or "journal," is absolutely too nasty to be described. The post-master at Highville cannot be aware of the character of this sheet, or he would discharge his duty by preventing its passage through the mails, and the decent citizens of the place should at once take measures to prevent further disgrace to their community by putting a stop to one of the most rascally sheets that has fallen under our notice....Not since the days of sweet Eddie Eastman, have we had anything so truly "teching" as the "Rev." Levi W. Remington's account of the Cherokee Discovery. Levi was in the City of Mexico—he saw an American being very much shot at and likewise clubbed on to; this was more than Levi could stand; the blood of the American eagle riz, and in short he "went for" that crowd, and for some not very obvious reason, he, with aid of soldiers, got this much mobbed Yank into prison. Yank died, but not before he told Levi his story about how once a big Injun told him about a wonderful plant, it was up in the mountains—the wonderful plants always are—but as this Yank's time was short, he had it all conveniently down in a book which he then and there made over to Levi. We wish we had space to tell the old Yank's story of the discovery of the wonderful shrub, and how afterwards he joined Gen. Taylor's army in Mexico and cured the men after the army surgeons had given them up, and all the rest of it; it is better than any two dime novels, as Levi tells it, and it is just a little ungrateful in Levi that he don't give the old fellow's name. Oh Levi W., you missed your calling when you went for a missionary; this effort of yours shows your true sphere would be found in writing blood and thunder plays for the Bowery theatres. Levi, are you good at word puzzles? Take the letter v out of Levi, and properly transpose the other letters, and it will make a word that exactly describes your story.

VARIOUS AND DOUBTFUL.

Inquiries continue to come about "real estate agents," who want $5 or $10 in advance, about curb-stone Wall street brokers, who are flooding the country with their circulars, which offer immense returns for small investments; remarkable mining companies, in which the purchase of a $5 share is likely to lead to a fortune, and similar projects. Regarding these, we can only repeat our advice not to put a dollar into the hands of an unaccredited stranger for any purpose whatever. Remember that legitimate schemes, those which offer a fair prospect of profit, do not have to go a begging all over the country by means of circulars; there are a plenty who stand ready to invest in any enterprise, if it can be shown that "there's money in it."

Fertilizers for Corn.—Special fertilizers for corn are most effective when applied near the seed in the hill or drill. One ounce to a hill, will use but about 300 pounds per acre, which is a liberal dressing.

Once More.—For the benefit of our many new subscribers, we must repeat what we have often stated: that editorial letters, to meet with attention, must be signed. Aside from the impropriety of writing to *any one* an anonymous letter, it is to the writer's interest to give his name. A large share of inquiries are of a kind that the answers to them interest no one else in the world save the person who makes them. Rather than take up space that belongs to all our readers, to answer questions for the benefit of one of them, we prefer to reply by mail. Every day almost brings us letters which the writers omit to sign.—"C." of Hanover, N. H., and many others, will understand why their letters are un-noticed. Our new readers should understand that we do not publish names if the writers do not wish it. Sign any name, but give us your own name and address, and draw a line around it, and we shall understand that the writer desires his name withheld. We do not notice anonymous letters.

Saving Green Clover.—"P. O. H.," Clover in a green condition, but free from damp, has been perfectly well preserved or cured, by putting it away in a mow, with layers of straw alternating with the clover. The layers should not be over a foot thick, and some salt should be spread upon the clover. The whole mass fermented strongly, but when used, was found to be excellent feed, the straw smelling like clover hay. The straw must be perfectly dry.

To Remove Warts.—"W. G." When the wart admits of it, a strong waxed thread may be tied tightly around it, close to the skin. In a short time the wart, will become loose and fall off. The spot may be touched daily with a piece of moistened lunar caustic.

Pump for a Stock Farm.—"J. I. K.," Adams Co., Pa. The American Submerged pump is one of the best for a stock yard. The valves being of metal, do not wear perceptibly, it can not freeze up, and is easily worked as a suction or force pump. It is made by the Bridgeport Manufacturing Co., Bridgeport, Ct.

Plan for Barn.—"C. R. S.," Berrien Co., Mich. The stock barn of which a plan was given in the *Agriculturist* of April, 1874, could be built by any carpenter from the plan itself. If he were furnished with the size of the buildings, he could easily make up a bill of the lumber needed. The size will depend upon the number of stock. For a 100-acre farm, well stocked, the yard should be 100 ft. square, and the sheds each 160 ft. long.

Effects of Subsoiling.—"G. P. W.," Union Spring, N. Y. The effects of subsoiling are to dry the surface, by permitting the water to sink through the upper soil. This tends to warm and aerate the subsoil. It also permits the roots to penetrate deeper, and we have never known or heard of a case in which a field was not improved by subsoiling. By subsoiling is meant only the breaking up of the subsoil, and not the bringing it to the surface.

Preserving Fence Posts.—C. Harlan, Wilmington, Delaware, writes that on March 8, 1845, he built a new fence. "The chestnut posts were sawed the year previous, and then soaked in a solution of corrosive sublimate for several weeks. The solution contained one lb. of corrosive sublimate to 14 gallons of water." "A few weeks since," writes Mr. H., "this fence was removed, and the posts were found to be as free from every appearance of decay as when set nearly thirty years ago. Judging from their perfect appearance, there is every reason to believe that they would last a hundred years."—The effect of corrosive sublimate is to coagulate the albumen, and also to prevent the growth of fungi. Many other substances have the same effect, such as crude carbolic acid and petroleum. Heating the wood to the temperature of boiling water, or even less, has the same effect, and this is one reason why charring posts helps to prevent their decay. Corrosive sublimate is a dangerous poison and an expensive article, and we should prefer to use some other preservative.

Jacks and Mules.—"F. W. G.," Ellis Co., Kansas. Mules are chiefly bred in southern Indiana, Illinois, Missouri, Tennessee, and Kentucky. Good jacks can be procured in almost any portion of these districts. They are valued at $300 and upwards. The breeding of mules is as profitable as any other stock business, but it must be carried on with skill to be successful.

Chicken Lice in a Stable.—"J. H. B.," Watertown, Ct. When a horse stable has become infested with chicken lice, the vermin may attack the horse and give him a great deal of trouble. He will be very restless, bite himself, roll and kick, and if not freed from them may be seriously hurt. It would be well to wash him all over with luke-warm carbolic soap suds, and rub him dry with a woolen cloth. The stable should be washed with lime-wash, to every pail of which an ounce of carbolic acid is added. This trouble is easily prevented by not keeping poultry in or near the stable.

Basket Items continued on page 197.

A Pennsylvania Dairy.

Eastburn Reeder, of Bucks County, Pa., sends us a sketch and description of a combined ice and dairy-house, which he has had in successful operation since July last. Nothing in dairying is more important than to secure a proper temperature and perfect purity of atmosphere, in the apartments where the milk and cream are kept, and the butter is made, and it will be seen by the following description, that these points have been well considered in the arrangement of this dairy. The building is shown in figure 1. It is 34 feet long, and 15 feet wide, and stands at a distance from any other building or any contaminating influence. It is divided into five apartments, the ice-house, seen at *a*, figure 2, the milk room, *b*, the vestibule, *c*, with stairs leading to the winter milk-room below, and an attic above, for the storage of sawdust for the ice. The ice-house is 12 ft. square, and 14 ft. deep, holding 36 loads of ice, or over 2,000 cubic feet. It is 6 ft. below ground, and 8 ft. above. The walls are of stone, 18 inches thick. The frame building above the wall is 8 ft. high. The lining boards of the ice-house extend down the face of the wall to the bottom, making an air-space of 18 inches, which is filled with sawdust. The ice-house is filled through three doors, one above the other, at the rear end. There is perfect drainage at the bottom of the ice-house, ample ventilation above, and no currents of air can reach the ice.

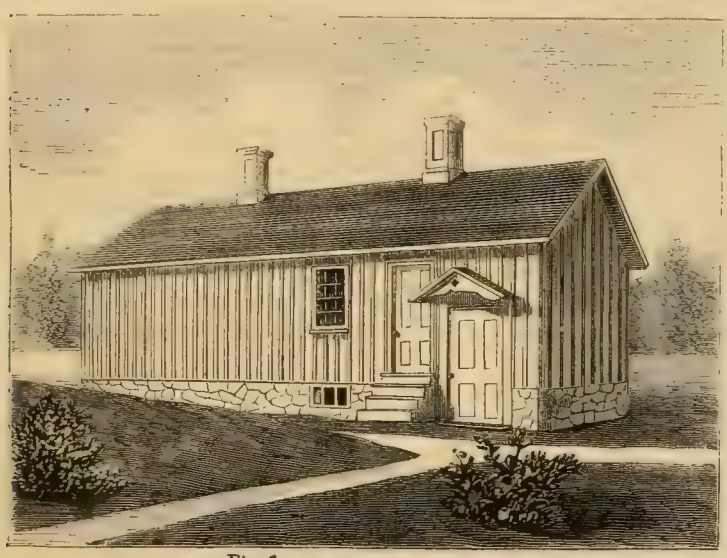


Fig. 1.—VIEW OF THE DAIRY.

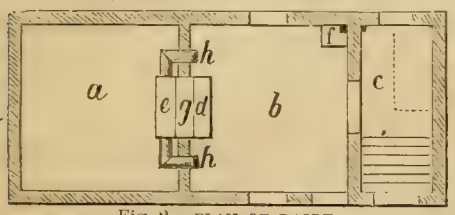


Fig. 2.—PLAN OF DAIRY.

The milk room (*b*) is 12 feet square, and is 1 foot lower than the ice-room. It is divided into two stories of 7½ feet each, for winter and summer use. A ventilator enters the ceiling of the lower room, and leads to the cupola at the top, furnishing complete ventilation for both rooms. The vestibule (*c*) is 4 feet wide, and 8 feet long. Here the milk is strained and skimmed, the butter is worked, and pans are stored. The floor is of flagging laid in cement, as is that of the winter or lower dairy. The pool (*d*) which contains ice-water, is 36 inches long, 16 inches wide, and 20 inches deep, and in this the deep pans and cream kettles are immersed. The waste from the ice-box (*e*) can be turned into this pool. If the deep can system of setting milk should be practiced, this pool can be lengthened to 12 feet. A drain (*f*) carries off all the waste water from the room. At *g*, figs. 2 and 3, is a cooling cupboard, located in the wall between the ice-house and the milk room, 6 feet high, 4 feet wide, and 18 inches deep. This is lined with galvanized sheet iron, has a stone slab at the bottom, and two slate shelves 15 inches wide, on which the cakes of butter are hardened before they are packed for market. A current of cold air can circulate around the shelves, as they are 3 inches narrower than the depth of the cupboard. There are latticed blinds in the doors of the cupboard, shown at *i*, *i*, figs. 3 and 4, where the doors are shown as open and closed. A current of cold air can pass through the lower lattices, and this causes an equal current of warmer air to pass through the upper ones. This warmer air, cooled by contact with the ice-box, *e*, passes down and out into the milk room, where a temperature of 60 degrees is easily maintained. By closing or opening these lattices, the change of temperature is regulated as may be desirable. At *h*, *h*, fig. 2, are ventilating pipes, which are provided with registers, seen at *r*, *r*, figs. 3 and 4. These communicate with the air chamber beneath the ice-box, and also with air flues at each end of it; thus two additional currents of cold air can be created when they may be needed. The windows of the lower milk-room are close to the ceiling, and above the surface of the ground outside. They are 3 feet 18 inches high. They are made with outer wire cloth screens, glazed sashes, and inner shutters or blinds. The milk-room can thus be aired and darkened at the same time, if this is desired. In operating this dairy, it has been found necessary to use 10 to 15 bushels of ice weekly, in the hottest weather of the summer; the ice-box then requiring filling two or three times each week. The air within the milk-room has always been dry, so that the floor will not remain damp after it is washed, longer than a few hours. The dairy has been examined when in operation, by a committee of the Solesbury Farmer's Club, who reported that it was the best dairy house they had ever seen. By an annoying mistake, the elevation of this dairy was some months ago used in place of one of a horse stable, because it happened to be of the same size.

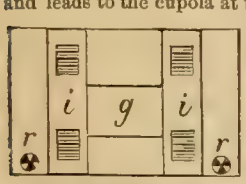


Fig. 3.—OPEN DOORS.

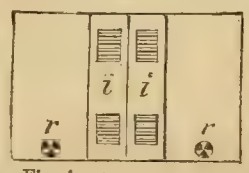


Fig. 4.—CLOSED DOORS.

THE DOG NUISANCE.—While much of the destruction of sheep by dogs is the result of carelessness on the part of the owners of both sheep and dogs, at the same time there are cases in which no possible amount of care can prevent damage. The protection of sheep against these ravages is therefore a matter to be provided for by law. The number of dogs may be usefully lessened, and when damages occur, the owners of the dogs which do the mischief, should properly be held liable for it. "Dog-laws," as they are called, are now becoming general. A very stringent law has recently been enacted in West Virginia for the protection of sheep, with a view to encourage wool and mutton growing in that state, which presents so many favorable conditions for this industry, and a bill has been presented to the New York State Legislature for the same purpose, which deserves to have the hearty support of every farmer in the State.

A Convenient House Costing $800.

BY S. B REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

The accompanying plans were designed for a simple, compact, and economical house, and will be appreciated by any one who may desire to know just how little is required to build a comfortable home. They provide ample room for a small family....The **Cellar** extends under the whole house, the walls are built as shown in the details of foundation and frame, given in the April *Amer. Agriculturist*, with 3 feet of masonry, and 3 feet of frame work....The **First Story** contains a good sized Hall, Parlor, and Kitchen or Living Room, with two closets, pump, and sink. The stairs to the cellar lead directly from the kitchen, passing down under the stairs in the main hall. A "fire-place heater" can be put in the parlor fire-place, which will also warm the chamber above. This method of heating is economical, and occupies but little room. ....The **Second Story** has three good sized rooms, two closets, and small hall, in the main house, and an attic over the kitchen. The floor of the attic is one foot lower than that of the main house; this gives valuable room for storage, etc. ....The highth of the first story of the main house is 8 feet 6 inches; of the second story, 7 feet. The highth of the kitchen ceiling is 7½ feet. The attic is arranged to have just standing room in the center....A great saving of time and trouble is made, when openings are provided for *regular sizes* of sash, blinds, and doors, as they may be obtained of seasoned and well made stock, at any time, from any dealer in such materials. These plans are drawn with reference to such regular sizes, viz.: the first story windows are 2 ft. 7 in. by 5 ft. 6 in.; second story 2 ft. 7 in. by 4 ft. 6 in.; cellar, 2 ft. by 2 ft. 8 in., all 1¾ inch thick. All principal windows should have their frames made with pockets and pulleys—and the sash hung with iron weights and good cord. The cost for the addition of these necessary parts, beyond what is required for the plain frame, is about as follows, for each window of ordinary size: 4 pulleys, (at 40c. per doz.) 14 cts.; 20 lbs. iron weights, 2½c. per lb., 50c.: ¼ lb. sash cord, 16c. per

Fig. 1.—FRONT ELEVATION.—Scale, 8 feet to 1 inch.

lb., 8c ; 1 doz. screws, ⅞ in., 35c. per gross, 3c. ; labor putting in pockets, pulleys, etc., 20c.—Total 95 cents., and when once done, will need no further attention or expense, while the house lasts. The satisfaction of having neat fitting, easy working sash, where the upper, or lower one, may be opened at will, is great. The saving of little fingers, and older nerves, to say nothing of shattered sash and glass, more than repays the extra cost of hanging sash....The front, rear, and parlor DOORS are 2 ft. 8 in. x 6 ft. 8 in. x 1¾ in.; other first story doors, 2 ft. 6 in. x 6 ft. 8 in. x 1¾ in. ; second story doors, 2 ft. 6 in. x 6 ft. 6 in. x 1¾ in. ; all 4-paneled, and neatly molded. The 1¾ inch doors have mortice locks; other doors rim locks, all with porcelain knobs and escutcheons....BLINDS are included for the first and second stories, in the estimate appended, at an average cost of $2.40 per pair, and may be omitted —but are recommended as useful, for they protect the sash from storms, and can be operated to give almost any desired light or shade in the rooms.... Many people may be in circumstances that would justify the building of one part of a house first, to be occupied as a temporary residence until means and opportunity warrant the building of the whole. A newly married couple could arrange to have the kitchen part built as a residence for a season, rather than forego the opportunity of setting out trees, vines, and shrubbery, planting, and otherwise developing their grounds. They would then be near the work when building the main part, to superintend it, and care for materials, saving much that is often wasted, or lost. The wing, or kitchen part, could be built at a cost of about $185, so arranged as that the main house could be joined to it at any time—or, what would be better, the main house may be built first, at a cost of about $650, and the kitchen added at convenience.....The exterior dressing of cornice, window-caps, and stoop, are decided in their character for simplicity, and boldness, giving a generous and finished appearance to the whole....**Novelty Siding**, fig. 6, is mentioned in the estimates for these houses, (see March No., p. 89.) This form of siding I first introduced some twelve years ago, since which time it has grown into general favor and use in this neighborhood. It has the following merits to recommend it: 1st, It is easily put on by ordinary mechanics. 2d, When properly nailed to the frame, it strengthens it, so as to make bracing of the frame almost unnecessary. 3d, The spaces between the studding, when the interior is plastered, are each air-tight compartments, containing only stationary air, which is a non-conductor of cold (or heat), thus protecting the inside wall from the extreme change of outward temperature. 4th, A cheaper quality of lumber can be used, the more cross-grained the materials, the less likely they are to check, or shrink, and any small, sound knots are easily covered with shellac before painting, which closes them effectually. 5th, The general surface is even, so that any brackets or other ornamentation can be put on

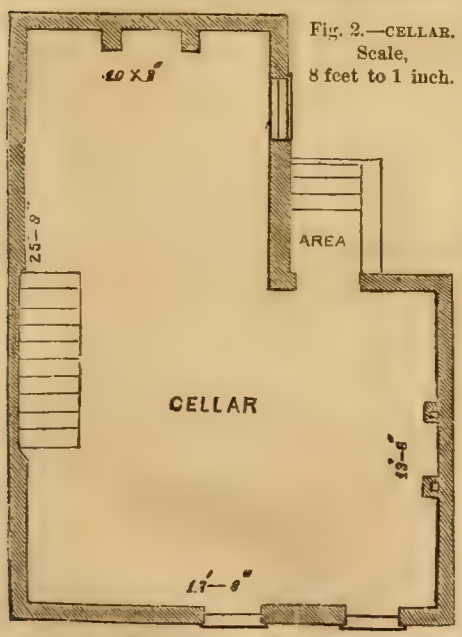


Fig. 2.—CELLAR. Scale, 8 feet to 1 inch.

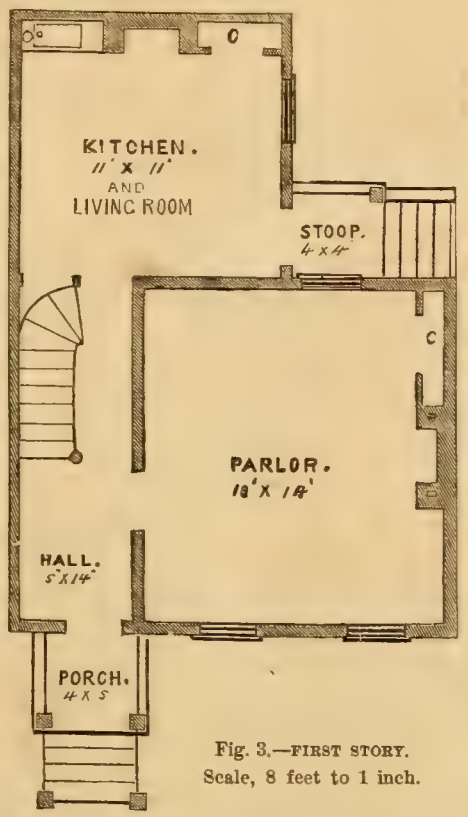


Fig. 3.—FIRST STORY. Scale, 8 feet to 1 inch.

without the trouble and difficulty of "scribing" them up to the clap-boarding....The **Shingling** referred to in the estimate, is of 18-inch Pine Shin-

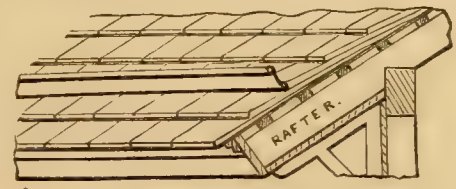


Fig. 5.—PORTION OF ROOF AND GUTTER.

gles, and may be laid 5½ in. to the weather, and secured with large headed "shingle nails." It is best in laying shingles to lap at one-third the breadth, never in the center, for should one shingle check in the center, as they are liable to do, an opening is made through the three courses, and a leaky roof will be the result. "Shingling lath" 1½ in. x 2 in., with the lower edge placed just where the butts of the shingles would cover, will allow air to freely circulate on both sides of the shingles, and preserve them one-third longer than when laid on close planking, which holds the moisture, and assists decay of every part of the roof....**Gutters.**—The old wooden gutter has nearly gone into disuse, and always seemed a barrier to any satisfactory finish of cornice. It was difficult to get timber of sufficient width for projections, and in such cases the cornices were proportioned by boxing off, and building up around this "gutter stick," which was bad construction—the outer edge of the gutter, being higher than the edge next the house, would cause the water, during heavy storms, or when the leader was choked up, to flow over against the frame work of the building, which was one of the most frequent causes of decay and settling in the older houses in this country.—The tin-lined "box" and "trough" gutters are often troublesome ; the tin cannot be laid in them except in long lengths, which have been soldered together while flat and smooth. To lay these long lengths into the ready-formed gutter, requires much bending and hammering, which breaks the best tin at the soldered joints, on the under-side, where it is impossible to repair it, so that, while it may not appear at once to leak, it is sure to do so soon, to be discovered after the cornice has been swelled out of shape or destroyed. The gutter that I have adopted in all cases where practicable, (see section, fig. 5,) either for shingles or slate, is made of charcoal tin, 14 inches wide, in lengths as long as can be well handled. One edge is turned or rolled up around a ½ iron rod, which makes a strong edge. Then a bend is made at 3½ inches from the turned edge, forming a right angle the whole length. This is laid on the second course of shingles, with one end lower than the other, so as to give a good run for the water. The ends are turned up where required, to stop the water, and a tube put through the cornice in the usual manner....For **Tin Roofs,** having a pitch of at least one inch to the foot, the gutters are formed in a similar manner, with the flat or bottom part about ½ inch wide, making a flange which is soldered to the roof near the eaves, to a line drawn at an angle to make one end lower than the other, as for shingle roofs. This is the simplest and best kind of gutter, will outlast any other, and in the event of a possible damage, or leakage, no harm will be done beyond the loss, or waste of the water that runs off over the eaves. It can be easily repaired, or replaced at any time, without interfering with the principal roof, and it saves the trouble, and expense, of building and boxing for gutters, or of making cornices with special reference to them, and it is cheaply constructed.

Fig. 6.—"NOVELTY SIDING."

Estimate of Cost of building by this plan in the vicinity of New York City:

38 yards Excavation, @ 20c. per yard	$7.60
5,000 Brick, furnished and laid, @ $15 ⅌ 1000	75.00
280 yards Lath and Plastering, 3 coats, @ 35c. per yard	70.00
1412 feet Timber, @ 2¼c. per foot	31.77
viz. 1 Sill, 3x8 in. x92 ft. long. 1 Girt, 4x8 in. x12 ft. long. 4 Posts, 4x6 in. x21 ft. long. 2 Ties, 4x6 in. x16 ft. long. 2 Plates, 4x6 in. x 19 ft. long. 2 Ties, 4x6 in. x19 ft. long. 2 Plates, 4x6 in. x 12 ft. long. 18 Beams, 3x8 in. x16 ft. l'g. 10 Beams, 3x7 in. x12 ft. long.	
1 Locust Post, 4 inch	$5
220 Wall Strips, 2x4 inches x13 feet long, @ 16c	35.20
160 Novelty Siding Boards, 9¾ inches, @ 38c	60.80
30 Rebated Siding, 9¾ inches, @ 38c	11.40
92 feet Cornice Materials	15.00
100 Shingling Lath, @ 6c	6.00
16 bunches Shingles, @ $2.25	36.00
Tin Gutters and Leaders	10.00
90 tongued and grooved Flooring, 9½ inches, @35c	31.50
8 Windows with Blinds, @$8	64.00
3 Cellar Windows, plain, @ $3	9.00
2 Stoop Materials	20.00
Stairs, 1st story and cellar	50.00
12 Doors and materials	48.00
Carpenter's Labor (not included above)	100.00
Painting, two coats	50.00
Cartage, average one mile	15.00
Extras, for Base, Sink, Pump, and Nails, etc	57.88
Total cost of materials and construction	$800.00

THE TROPHY IN FRANCE.—Though the writer sent seeds of the Trophy tomato to France the first year it was offered here, we have seen no notice of it until recently. M. Bossin, the high authority upon garden vegetables, says in the *Revue Horticole*,

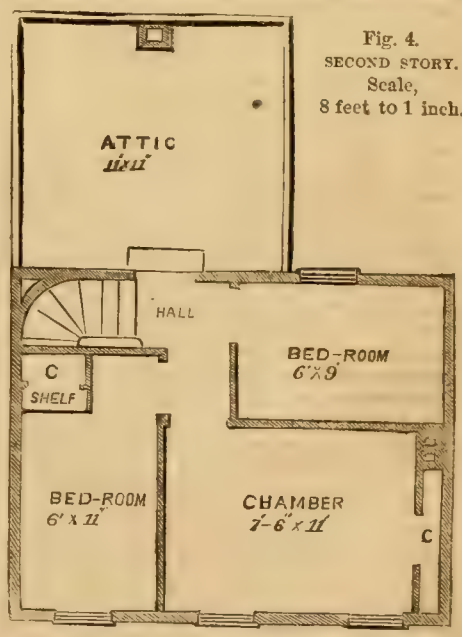


Fig. 4. SECOND STORY. Scale, 8 feet to 1 inch.

"This Tomato appears so good that we believe it to be our duty to give it particular mention as an 'alimentary and condimentary' plant." Europeans

are gradually learning that there are some things in this country worth having, and that all the good things do not originate on the other side of the water.

Ogden Farm Papers.—No. 63.

BY GEORGE E. WARING, JR.,

I have been asked about cattle and sheep-raising for Florida, Georgia, and South Carolina, how to get the best result from raising grades by crossing thoroughbred bulls on the native cows of the region; and in what way to get the best improvement upon common sheep. If the making of good butter for sale is an important item of the business, the Jersey is the best breed to be selected. If, however, a combination of milking and beef-making qualities is desired, I should then suggest the use of a thoroughbred Devon bull, say from stock long ago introduced into Georgia by Mr. Peters, of Atlanta, changing the bull every two years to secure an infusion of fresh blood. Devons, for this purpose, would perhaps be no better than Ayrshires, but it is not so well demonstrated that the latter are well adapted to the southern climate, and good Devon grades are admirably well suited for the purposes required, being hardy, thrifty, tractable, and of good size. As a rule, they are a good milking race, and easily fattened to good beef. Concerning sheep, I should decidedly recommend crossing with the Cotswold ram. The proper plan would be to get the best lot of native ewes to be readily found, and to put Cotswold rams with them, this whether the ewes are grades of either Merino or some long-wooled kind. In this way, early maturity and an increased quantity of wool will be secured. The wool will be nearly doubled on the first cross. To establish an improved flock, keep the whole or a part of the ewe lambs thus bred, and continue to breed Cotswold rams to them, never using a grade ram. However, the largest returns of immediate profit will be secured by feeding the ewes from the time the lambs are dropped, systematically and well, until they are ready for the butcher, supplying their places as breeders by a new lot of natives. Perhaps the two plans might be combined; or, keep all the ewe lambs, get *two shearings* and one lamb, and have them ready for the butcher as soon after weaning their lambs as possible, to make room for the next crop of ewes, and so on.

I probably get more letters on the subject of the failure of cows to get with calf than on any other, and have had some trouble of the same sort in my own herd. Among these letters, and as a result of conversation with farmers, I have come into possession of more "sure" rules for securing the desired result than there are cows at Ogden Farm; but every one of them that I have tried has appeared, like most of the sure rules of life, to have at least enough exceptions to prove their truth. In short, they are no rules at all, only opinions, sometimes supported by coincidences. The only suggestion I have met which seems to have a scientific foundation, is that for the removal of the clitoris, which is the chief seat of irritation. I have long known of the use of this method in Great Britain, and that it was considered in some cases a certain remedy, but not knowing how to perform the operation myself, I have never tried it, though I have now a candidate in a valuable young heifer that has been barren more than a year, and I shall try to find some one who can make the excision. Some months ago I recommended the trial to a physician in Connecticut, having a large herd of Jerseys, and he thinks the operation has been successful.

This same correspondent submits a curious proposition, on which some reader may be able to throw light, I cannot. He says, "I have four dash churns situated thus: No. 1 (4 ft.) No. 3

6 in. 6 in.

No. 2 (4 ft.) No. 4

Four feet between 1 and 3, also between 2 and 4; about six to eight inches between 1 and 2, and 3 and 4. How the butter *always* comes in No. 1 in less than two-thirds of the time it does in Nos. 2, 3, and 4, and in Nos. 2, 3, and 4 it always comes in about the same time, not more than five or eight minutes. If it takes 60 minutes for No. 1, it will take an hour and a half or three-quarters for either of the other three. If any one can explain this to me, I think you can. If not, I conclude what 'you and I do not know is not worth knowing.'"

Mr. Robert Hood, of Cumberland Co., Pa., asks why milk drawn three or four weeks before calving curdles on boiling as sour milk does, and he very properly suggests that if the time of calving is not known, occasional boiling of the milk will indicate it—of course only when cows fail to dry off in time, which is very frequently the case with Jerseys.

A pretty clear light seems to be thrown on this subject by Dr. Sturtevant, in his recent paper read before the Connecticut Agricultural Society, which, like everything coming from this careful investigator and unprejudiced reporter, seems to me peculiarly worthy of attention and confidence. The facts reported, although at least confirmed by Dr. Sturtevant's own investigations, may have been known before, but he is certainly entitled to the credit of giving them to the public in a very intelligent and acceptable form. He says that butter is not a secretion from the blood, but that it is a part of the actual material of the cow's udder, which, after undergoing a sort of fatty degeneration, is thrown off during the production of milk, and is instantly mingled with it in the ducts and reservoirs leading to the teat,—that is to say, the whole interior surface of the udder, constituting the walls of the interstices through which the milk passes, is a fatty formation, that is, it is made up of minute cells containing fat as it exists in the globules of cream. These cells follow the common law of reproduction by the process known as "budding," or the formation of two cells out of one, and the growth of both to the full size. As these cells grow they are separated from the organism and pass into the milk, and this is the source of all the butter globules in all milk. During the excitement of the reproductive organs that precedes and follows the birth of the calf, the multiplication of the cells becomes more active, and they are cast off prematurely, and often before they are fully separated, cast off in groups; there is an undue proportion of cell membrane, the fatty degeneration has not been completed, and they give to the secretion the character that we know as *colostrum*, which is the purgative milk of a cow that has just calved, or is about to calve, which is not fit for use, but which is especially needed for the cleansing of the intestines of the new born progeny. The same production of colostrum corpuscles giving their peculiar character to the milk, may take place during fevers or as a result of external injury to the udder. It is this formation of colostrum that spoils the milk as referred to in Mr. Hood's letter.

Dr. Sturtevant has made a careful microscopic study of milk, especially with reference to the size and character of the butter globules; and although he is an Ayrshire breeder, and a champion of that race, (and finds ample physiological reason for the faith that is in him), he does not hesitate to accord to the Jerseys all the advantage that the study of the globules shows them to be entitled to. He says that these globules are largest with the Jerseys and smallest with the Dutch, or so-called "Holstein" cows, the Ayrshires occupying an intermediate position. The globules consist of butter enclosed in a very thin sac, and the process of churning causes the rupturing of the sacs, allowing their contents to adhere, and to "come" as butter. Other things being equal, the larger the globule the quicker the churning, and, consequently, the more uniform the size of the globule, the more complete is the extraction of the butter. The influence extends also to the length of time needed to prepare milk for churning; he says: "Twenty-four hours' standing will hasten the churning of Jersey milk more than will forty-eight hours affect the churning of Ayrshire milk." Butter from large globules is of better grain than that from small globules of even the same milk, which may account for the disadvantage of what is called overchurning; as the larger and better grained globules, which make the best butter, will be the first to come, and the quality must be injuriously affected by adding to this first butter the product of the later rupturing of the smaller and less perfectly grained globules. During the early milking of a fresh cow, when the functions of the udder are carried on with the greatest activity, the globules are gorged and the relative differences in size are exaggerated. The butter begins to come after churning a short time, and as the process goes on, globules of smaller size are ruptured and added to the mass, giving an irregularity to the character of the product. But as time elapses, the production of the milk becomes more regular, the difference between the sizes of the globules is lessened, and, while a longer time is required for churning, the product is more uniform, and more butter is extracted in proportion to the actual amount of butter-globules in the milk. Again, as the larger globules are lighter than the smaller ones, not only will milk having large globules throw up its cream more rapidly, but the cream first rising will contain the largest globules, and therefore make the best butter.

These internal milk-glands of the udder are allied to the glands of the skin, and it is by analogy that we find a fine and free-skinned cow to be a good butter producer, and that a staring coat and tight hide, (whether resulting from breed or from temporary low condition), to be an index to permanent or temporary defective butter production. Such a course of feeding as will improve the condition of hide and hair will also improve the development of the butter; good feeding either increasing the size of the globules developed, or so stimulating the activity of the parts that cell budding and separation becomes more rapid. The character of the globules, and their manner of budding or separation is a matter of structure, and structure is a matter of race or breed, so that the amount and character of the butter produced is due less to the manner in which an animal is fed, than to the breed to which it belongs; although, as the globule-producing character of the race is the *ultimate* result of the slow influence of care, climate, and diet, acting on many generations, we may, by judicious treatment, steadily improve the character of the animals we breed, from generation to generation; but the wise course would be to begin with the best developed race we can find, in order that our improvement may start from the highest possible point. In like manner, by starvation, exposure, and abuse, we may cause a deterioration of even the best race, and we may soon reduce a race of average good quality to a really worthless condition. The practical teaching of Dr. Sturtevant's investigations, therefore, is, that the best animals for the butter-maker are those in which the large butter-producing cell is a fixed characteristic, and that whatever the natural or structural condition of the animal or race may be, it will improve or deteriorate, according to good treatment or to bad treatment.

Different races have different structural tendencies; a race bred for beef, has its development of cells subject to fatty degeneration, placed in the adipose tissue; in a butter producing breed, they are placed in the udder; at the same time, the tendency to fatty development in either class of organs, is closely allied, and may be, in the same animal, to a greater or less extent transformed from one to the other; so that the great point is, to have an animal with the fat-producing tendency as a chief characteristic, in order that when the production of butter ceases, as the milk dries off, there will be a deposition of fat in the carcase, and as the milking becomes active, there will be a tendency to divert the fat-producing parts of the food to the udder, and even, as is constantly seen, a transferrence of fat already developed from the adipose tissue to the udder, for a demand upon the blood to supply cream in the udder, in excess of what the food is able to furnish, will cause the blood to carry in this direction, the fat thrown off by the reduction of the adipose tissue.

Another of Dr. Sturtevant's propositions is this: "The superior cow is more a creature of art, and

the inferior cow more the production of nature, and, accordingly, the best and poorest cow of the herd, being fed with an increased supply of food, in every case the better cow will respond to a greater extent than the poorer,"—that is to say, the better cow is one whose structure, developed through long generations of improving influences, determines the deposition of assimilated food to a greater degree in the udder products. There is a limit to the possible butter production of every cow, and if butter be the product sought, there will be no gain in feeding beyond this limit. If one cow is capable of making two pounds of butter per day, and another but one pound per day, the one will turn into profit only half as much food as the other—that is, only half as much of what is in excess of the actual requirements of vitality. If it takes ten pounds of food to keep the animal in good condition, an additional ten pounds may all be returned in the product of the good cow, while only half of it would be returned in the product of the poor cow, the other half going to waste. Or, as Dr. Sturtevant states it, "the quantity of milk (or butter?) yielded by an animal, is dependent both on her structure and nutrition. In the presence of sufficient food, it is determined entirely by structure, which is equivalent to saying, by inheritance." The improvement of the domestic cow has increased her capacity for digesting food, and her economy in digesting, and has extended to her glandular structure, giving it a greater power to throw off the products of digestion in a valuable form. It is believed that the effects of domestication and copious feeding, has been actually to increase the length of the intestines, and Cuvier states that while the intestine of the wild boar is 9 times the length of his body, that of the common domestic boar is 13½ times, and of the Siam breed 16 times. Whether entirely from this cause or not, it is certainly true that the superior cow will give a larger proportional return from copious feeding, than will an inferior one; and while it may be profitable to feed corn-meal and other nutritious food to animals of the best class, it is quite sure to result in a loss if fed to those of the worst class. The result we wish to obtain in feeding dairy animals, is to obtain a valuable product in the form of butter and cheese, and this is an artificial result—to obtain it we must use artificial means, that is, an animal developed *by art* to an unnatural determination of the products of digestion to the udder.

Some of Dr. Sturtevant's general conclusions are as follows: "The production of butter is largely dependent on breed; There is a structural limit to the butter production of each cow; When the cow is fed to this limit, increased food can not increase the product; The superior cow has this structural limit at a greater distance from ordinary feed, and is more ready to respond to stimuli than the inferior cow; The character of the food has some influence on the character of the butter, but even here breed influences more than food.

Science Applied to Farming.—V.

By Prof. W. O. Atwater, Wesleyan University
Middletown, Conn.

How Science is Saving Money and Increasing the Profits of Farming—Further About Feeding Animals.

Many farmers consider straw and cornstalks as nearly worthless for fodder. Others feed them to their stock, and find them very valuable. On English farms you may see straw stacked as carefully as hay, and sold at a guinea ($5.09 gold) per ton, for mixing with other food for stock. And in France and Germany straw is as staple an article of fodder as hay. I recall one case in Germany, when oat straw was rated at $5.50, good clover hay at $8.50, and field beets at $2.15, gold, per ton; another where barley straw was valued at $4.33, and clover hay at $13.00 per ton, these being the prices at which those materials were actually bought and sold for fodder. And in those parts of this country and of Europe especially, which are most noted for their successful agriculture, straw and like fodder-materials are used with profit, not only for store cattle and sheep, but also for horses, working oxen, milch cows, and fattening cattle. The theory that these foods contain so much material for making meat and milk and producing animal heat and muscular force, is well explained on scientific grounds, *is proved by practice* and *is supported by accurate experiments.* Here is a table giving the average values of different foods as based upon the amount of *digestible, nutritive material* they contain, taken from the German farmer's diary, referred to in previous articles:

	Per ton.		Per ton.
Meadow hay	$9.00	Bean straw	$6.93
Winter wheat straw	4.32	Wheat chaff	6.39
Summer barley straw	4.86	Oat straw	5.49
Corn stalks	5.40	Winter barley straw	4.23
Clover hay	11.17	Pea straw	6.03
Rye straw	3.78		

Now why is it that so many American farmers put so low an estimate upon straw, and like substances, and what is the secret of making them so valuable for fodder in Europe? One reason for this difference is doubtless the fact that here the grain is often allowed to stand too long before harvesting. Early cut straw, like early cut hay, is much more digestible and nutritious than that which is allowed to stand longer. European farmers, who make so good use of straw, harvest their grain much earlier than many do with us. The land there, too, is much better manured than it is here, and grain, well supplied with barnyard manure, guano, or other fertilizers containing much nitrogen, yields a large luxuriant stalk, which keeps green until quite mature. Well manured hay and clover are more nutritious than those poorly manured, and the same is doubtless true of straw.

But the great reason why farmers find such foods as straw of little worth, is that *when fed alone*, they have really but little value. To get the full benefit of all the digestible material of straw, other things must be mixed with it. It will be well worth while to study this matter carefully. It was explained in the last article, that the value of food for making meat and milk, or producing heat to keep the animal warm, or muscular force needed for work, depends upon the *digested* portion. In an experiment there described* an ox digested 7 9/10 lbs. from 16 9/10 lbs. of good hay. At this rate the animal would digest from 17 lbs. of hay, and from 20 lbs. of straw, about the same amount of nutritive material, viz.: 8 lbs. Mark that, *there was as much nutritive material from 20 lbs. of oat straw as from 17 lbs. of hay.* This is not mere theory, it is the testimony of the animals themselves, verified by the strictest scientific tests, not in one case alone, but in scores, yes hundreds of accurate feeding trials. But it would be absurd to claim that 20 lbs. of straw is worth as much for fodder as 17 lbs. of hay. The *quantity* of the nutritive material and its *value* are two different things, as the table below explains:

		Consisting of	
	Digestible materials.	Albuminoids.	Carbo-hydrates.
20 lbs. of straw	8 lbs.	.65	7.35
17 lbs. of meadow hay	8 lbs.	1.37	6.63

In other words, the meadow hay furnishes twice as much digestible *albuminoids* as the straw, and is more valuable fodder. Straw is, however, very valuable when fed so as to secure the utilization of the digestible material which it actually contains. To make it an appropriate fodder for the ordinary demands of our domestic animals, we must mix with it some other substance rich in nitrogen. In fact, in the experiments referred to, the straw was mixed with bean meal, which contains a large proportion of albuminoids. In this way the fullest utilization of both was secured.

Let us examine this matter closely. We learned in the last two articles, that to feed stock economically, the food must contain just such quantities of albuminoids and carbo-hydrates, as are adapted to the demands of the animals. An ox at rest in the stall, or a dry cow, requires a certain amount of food containing a certain quantity of these substances. But if the ox is to be kept at work, or the cow is to give milk, more food will be required. And this extra amount must consist largely of albuminoids. The reason for this is very simple. Milk is produced from material in the food. All the casein (curd), and much of the fat (butter), are made from the albuminoids. So food for milch cows must be rich in nitrogen. The same is true of fattening cattle, since all the lean meat, and much of the fat meat, comes from the nitrogenous material, (albuminoids), of the food. In the same way the muscular force is produced in great part from albuminoids, and the working ox must have food rich in nitrogen.

The practical lesson to be learned, is, that we need not necessarily feed these animals a large extra quantity of more costly hay or clover, to get the additional albuminoids, but that we may use straw and the like, to supply carbo-hydrates, and add a small quantity of food containing much nitrogen in a concentrated form. For example, a good quantity of straw, with a few pounds of beans, oil-cake, etc., furnish the animal with just the same necessary food materials, as a large supply of more costly hay. It is by carefully studying these principles and applying them to practice that the greatest saving, and consequently the largest profit, is made.

We have not space to explain the elaborate and costly feeding trials by which these principles have been learned, but we may illustrate the facts by some familiar examples. Young succulent grass or clover is a natural food for milch cows. With these they will give a full yield of rich milk. They will likewise do well on hay of prime quality such as that which grows on uplands and consists of grasses mixed with clover and other leafy undergrowth. But it is a matter of common experience, that the best production of milk can not be obtained from hay of average quality, and still less from that of inferior grades, such as is grown on marshes, or has been injured by rain. With straw alone, the yield of milk would be very poor indeed. Store cattle, however, as oxen at rest, and dry cows, may be kept in fair condition on even the poorer qualities of hay, and they will live and sometimes do passably well on good straw. Now let us see how much of digestible material these foods would contain. From table 6, in the April number of this series, we make the following calculations, the figures representing general averages:

There is contained in	Digestible Substances	Consisting of Albuminoids	Carbo-hy'ates	Fat.
	lbs.	lbs.	lbs.	lbs.
110 lbs. young grass	15.5	2.5	12.6	0.4
30 lbs. of prime quality hay	15.6	2.5	12.8	0.3
33 lbs. of average quality hay	15.8	1.8	13.7	0.8
40 lbs. of inferior quality hay	15.6	1.4	14.0	0.2
40 lbs. Oat straw	15.6	0.5	14.9	0.2
47 lbs. Wheat straw	15.7	0.4	15.1	0.2

Now let us compare the above figures. A cow will digest from 110 lbs. of young grass about 15½ lbs. This would consist of 2¾ lbs. albuminoids, 12 3/5 lbs. carbo-hydrates, and 2/5 lb. fatty matter, and would make a good daily ration for an ordinary cow of 1,000 lbs. live weight. 30 lbs. of prime quality hay would give about the same proportions of nutritive substance, and with this, too, the cow would give a good yield of milk. If, however, she has hay of only medium quality, she would have to eat 33 lbs. to get her 15½ lbs. of digestible substance, and then she would have only 1 4/5 lb. albuminoids, or about ⅔ as much as before, and the milk yield would be smaller. If she had the inferior hay, she would have to get all the digestible material from 40 lbs. to make up the same amount of 15½ lbs., and would still have but 1 2/5 lb. albuminoids. With the straw the case would be still worse. The cow would be unable to digest 15½ lbs. from a daily ration of 47 lbs. It is a remarkable fact that animals do not digest all the really digestible material of their food, unless it has a certain proportion of nitrogen, and this must be larger than that in the straw. One chief defect of these poor foods, then, is lack of nitrogen. What is the remedy? Clearly, to supply nitrogen.

To secure the full value of straw and like materials in feeding, we must combine them with other substances rich in nitrogen. There are a great many substances which contain a larger proportion of albuminoids than is necessary under any circumstances. One of the most important of these is clover. There are certain other plants similar to clover, as lucern, esparsette, and seradella, which are largely cultivated in many places,

* See Table in Article No. IV. April *Agriculturist.*

and should be more generally introduced with us. Beans, peas, and vetches, contain a great deal of nitrogen, and are very digestible. They are among the most common kinds of fodder in many countries. The same is true of oil-cake and cotton-seed meal, and of malt sprouts, brewers' grains, and refuse slump from the manufacture of starch and spirituous liquors. Bran, shorts, and corn-meal, contain considerable albuminoids, though proportionally less than the other materials, as will be seen by reference to Table 6, in the previous article.

I should be glad to say a good deal more about the value of these nitrogenous foods and the proper way to use them, but the editors think that these scientific articles are such heavy reading, that they ought to be short. So I will simply add some German fodder tables, showing in what proportions these foods may be mixed with others, so as to secure the greatest benefit from both.

MORE FODDER TABLES.

In the March article were given a number of fodder tables for oxen and milch-cows. The explanations there given apply to these. The rations are calculated for 1,000 lbs. live weight of the animals.

Table 4 *(of March number, page 92; continued.*

V.—For Fattening Cattle.

T	or U	or V
5 lbs. Meadow hay	6 lbs. Meadow hay	8 lbs. Timothy hay
8 lbs. Oat straw	7 lbs. Oat straw	2 lbs. Barley straw
125 lbs. Potato slump	55 lbs. Beets	42 lbs. Sugar beet cakes
2½ lbs. Rape cakes	5 lbs. Rape cakes	5 lbs. Rape cakes
7 lbs. Maize meal	1 lb. Linseed [ley	1 lb. Linseed
	3 lbs. Unbol'd Bar-	

or X	or Y	or Z
6 lbs. Clover hay	8 lbs. Clover hay	10 lbs. Aftermath
7 lbs. Barley straw	43 lbs. Potatoes	4 lbs. Oat straw
70 lbs. Beets	5 lbs. Bran meal	20 lbs. Potatoes
2 lbs. Linseed	¾ lb. Rape seed oil	20 lbs. Brewer's grains
3 lbs. Bean meal		1½ lb. Rape seed
2 lbs. UnboltedRye		2 lbs. Malt sprouts

VI.—Fodder for Store Sheep.

A*a*	or B*a*	or C*a*
15 lbs. Barley straw	9 lbs. Clover hay	9 lbs. Clover hay
9 lbs. Wheat chaff	12 lbs. Barley straw	14 lbs. Wheat straw
13 lbs. Potatoes	27 lbs. Potatoes	23 lbs. Potatoes
3 lbs. Rape cakes		

or D*a*	or E*a*	or F*a*
17 lbs. Oat straw	22 lbs. Pea straw	15 lbs. Meadow hay
9 lbs. Clover hay	4 lbs. Meadow hay	3½ lbs. Clover nay
23 lbs. Beets	11 lbs. Potatoes	12 lbs. Oat straw

or G*a*	or H*a*	or I*a*
12 lbs. Aftermath	10 lbs. Clover hay	19 lbs. Barley straw
10 lbs. Pea straw	15 lbs. Oat straw	5 lbs. Clover hay
7½ lbs. Wheat straw	15 lbs. Potatoes	40 lbs. Beets
		1 lb. Rape cake

VII.—Fodder for Fattening Sheep.

K*a*	or L*a*	or M*a*
6 lbs. Timothy hay	7 lbs. Meadow hay	15 lbs. Esparsette hay
4 lbs. Clover hay	5 lbs. Clover hay	30 lbs. Turnips
23 lbs. Potatoes	40 lbs. Beets	4 lbs. Rye bran
3½ lbs. Rape Cake	1 lb. Rape seed	1 lb. Linseed
6 lbs. Crushed Maize	4 lbs. Bean meal	5 lbs. Crushed Barley
2 lbs. Bean meal	6 lbs. Crushed Barley	

To some persons these mixtures may seem complicated. They are, however, useful examples of the ways in which the strictest economy is practised. We are rapidly approaching the point where we shall be compelled, as European farmers have long since been, to economize in such ways as these.

From what has been said here, let us not fail to carry away this main idea. A great deal of food, which is ordinarily considered very poor, is really very valuable. It is poor only because it lacks nitrogen. To realize its full worth for fodder, other foods, richer in nitrogen, must be added to it. In this way cheap mixtures may be made rich enough for all purposes of feeding.

There is one more important point in this connection. The economy of this process does not end with feeding. Our lands need nitrogen in manure as much as our cattle do in their food. If we use more nitrogenous fodder, we shall have richer manure and larger crops.

One of the chief defects of our agriculture is the want of nitrogen in food and in manure. To remedy this, we need to use waste nitrogenous products, and to cultivate beans, peas, clover, and other crops, rich in nitrogen. Especially let us have more clover, as the quickest and most available resort.

Voices from the Bee Hive.

INTERPRETED BY M. QUINBY, ST. JOHNSVILLE, N. Y.

If the flowers yield abundantly, we need to be fed but little. On no account allow us to suffer until the flowers yield plentifully. Clover may not yield much until some time in June. Strong hives sometimes starve from the failure of honey in flowers, when there was just enough in the hive to feed a large brood and get it sealed over. When we are in any way stimulated to rear a large brood, we must not be neglected afterwards. Very often there is a dearth of honey between fruit blossoms and clover. Sometimes an extra stock, with honey sufficient early in the season to rear an ordinary number of workers, and even a brood of drones preparatory to swarming, is overtaken by a scarcity, when the drones will be sacrificed, and occasionally when the dearth is prolonged, the just hatched young workers also; even if we all do not starve at such a time. If we have a plenty of honey, and are weak in numbers, we increase moderately. In such a case, having honey on hand to carry us through this dearth, and continuing to increase moderately without any stoppage, we are ready to swarm earlier than those that had used their honey to rear early drones. Whenever we are stimulated by any means to rear early brood, we must be watched carefully. It will not do to see us flying thickly, and guess we are getting honey. Examinations need to be made within the hive, combs taken out, and cells looked into—all that are interested in this part, have movable combs. If there is sealed honey, all are safe from starving for several days. Be sure and keep a circle of cells containing honey, all the time outside the brood. It need not always be sealed over, but it should be there. If we are examined in the middle of the day, when honey is scarce, be careful and not keep the hive open unnecessarily long, because outsiders may be disposed to rob. We can be fed with Van Dusen's feeder, the most conveniently of any. Let this fact be impressed, that we act according to circumstances, very like the human subject. If the flowers yield honey, and the weather is suitable, we collect it; if one takes what we have done, as indicating what we will do under different circumstances, he will often fail in his expectations.

It is not too late to move us yet if we are taken a mile or more. If we are crowded, and the weather is warm, give us plenty of air, and a sponge containing water. Iron wire cloth is best to fasten us in the hive.

There are some strains or breeds of bees much superior in industry to others—both black and Italian. We cannot say how such are to be distinguished except by their thrift. Do not take the lightest and brightest Italians to be always the best workers, but see what the ordinary swarms do. Those that swarm first, and accumulate stores the most rapidly, are the ones to breed from. If one hive throws out a swarm early, and accumulates stores, and another equally strong, does not keep pace with it, by a few weeks, when both had an equal chance, the first is the one to propagate from. Watch closely, and see which is to be preferred. The rearing of queens will be given hereafter. [A large part of Mr. Quinby's article omitted for want of room.—ED.]

The Great Swine Trade at the West—Interesting and Important Figures—"Hard Times."

According to the reports submitted to the Cincinnati Chamber of Commerce, the whole number of Hogs packed in western towns the past season, amounted to over five and a half millions (**5,537,124,**) an excess of **243,314** *over any previous year!* As prices of pork and lard have been well maintained, the farmers producing these five and a half millions of hogs, and the corn that fed them, have little cause to complain of "hard times"—especially as they have been able to buy all kinds of manufactured goods and family supplies cheaper than at any other period in twelve years. An intelligent friend from Iowa recently informed us that, owing to the high value of pork and lard, the farmers of that State were, *generally*, better off than ever before. Those raising wheat alone were less favored, comparatively. [The largest sufferers from "hard times" have been among those who have been thrown out of employment directly or indirectly by the cessation of railroad building, in which an average of over a Hundred Million Dollars a year were expended prior to the "panic of 1873"—much of this money coming from foreign sources, as investments in bonds and stock. Of course, the eastern manufacturers, and the traders, who supplied the iron for these railroads and the articles worn and used by these builders, have suffered from the cessation of demand for their products, and this has thrown out of employ another large class of persons. If any one will trace out these hundreds of millions, all through the channels of trade, he will readily see that the effect has been felt in almost every town and hamlet throughout the whole country, and that in the aggregate several millions of persons have been the sufferers.]

The following table gives the number of hogs annually packed at the West during 26 years past:

1874–5	5,537,124	1866–7	3,490,791
1872–3	5,456,004	1858–9	2,465,552
1873–4	5,383,810	1864–5	2,422,779
1871–2	4,782,403	1859–60	2,350,322
1862–3	4,069,520	1857–8	2,210,778
1870–1	3,623,404	1852–3	2,201,110
1863–4	3,261,105	1861–2	2,155,702
1861–2	2,898,666	1854–5	2,124,404
1867–8	2,78 ,084	1856–7	1,818,778
1869–70	2,635,312	1865–6	1,785,956
1853–4	2,534,770	1849–50	1,652,220
1868–9	2,499,373	1850–1	1,332,867
1855–6	2,489,302	1851–2	1,182,846

Total number packed in 26 years.....**74,157,182**
Average per year.....**2,852,200**

It will be noted that the past winter's packing exceeds by nearly 2,684,924 the average for the past 26 years. The following table gives the number packed the past winter at points where 10,000 or more were reported:

Chicago, Ill.	1,690,348	Pekin, Ill.	17,068
Cincinnati, Ohio	560,164	Lawrence, Kansas	17,000
St. Louis, Mo.	462,246	Washington C. H., O.	16,335
Indianapolis, Ind.	278,339	Greensburg, Ind.	15,907
Louisville, Ky.	273,118	Lacon, Ill.	15,286
Milwaukee, Wis.	248,197	Evansville, Ind.	15 160
St. Joe & vicinity, Mo.	117,050	Delphi, Ind.	15,140
Peoria, Ill.	112,750	Columbus, Ind.	15,077
Cleveland, Ohio	80,266	St. Paul, Minn.	15,009
Des Moines, Iowa	74,017	Toledo, Ohio	14,174
Kansas City, Mo.	73,500	Wilmington, Ohio	14,286
Keokuk, Iowa	72,000	Hagerstown, Ind.	14,250
Quincy, Ill.	55,808	Martinsville, Ind.	13,960
Cedar Rapids, Iowa	54,6 0	Leavenworth, Kan.	13,751
Dubuque, Iowa	53,500	Canton, Mo.	13,000
Detroit, Mich.	38,376	Omaha, Neb.	1 ,000
Sabula, Iowa	37,318	Lafayette, Ind.	12,830
Ottumwa, Iowa	35,000	Nashville, Tenn.	12,200
Terre Haute, Iowa	32,000	Chillicothe, Ohio	12,238
Richmond, Ind.	27,700	New Castle, Ind.	11,685
Franklin, Ind.	27,406	Wabash, Ind.	11,640
Gosport, Ind.	25,571	Sioux City, Iowa	11,296
Galena, Ill.	24,000	Marion, Ind.	11,000
Circleville, Ohio	23,486	Ripley, Ohio	11,000
Council Bluffs, Iowa	20,000	Springfield, Ill.	10,500
Xenia, Ohio	18,842	Burlington, Iowa	10,150
Muncie, Ind.	18,100	Barry, Ill.	10,000
Charleston, Ill.	17,202	Davenport, Iowa	10,000

By adding the amounts in this last table, we have the following numbers by States:

Illinois	1,952,962	Wisconsin	248,197
Ohio	751,091	Michigan	38,376
Missouri	665,796	Kansas	30,751
Indiana	545,765	Minnesota	15,000
Iowa	377,901	Nebraska	13,000
Kentucky	273,118	Tennessee	12,300

This accounts for only 4,924,257 hogs packed in the 56 towns enumerated, leaving 612,867 for towns packing less than 10,000, in the different States.

The comparative average net weights of hogs, and the average yield of lard per head, for the two seasons, 1873–4 and 1874–5, are as follows:

	1873–4		1874–5	
	Weight of Hogs.	Lard.	Weight of Hogs.	Lard.
Ohio	233.19	30.01	222.73	30.36
Indiana	207.22	29.66	208.80	29.83
Illinois	219.02	37.23	213.76	36 66
Iowa	204.67	33.88	198.67	33.52
Missouri	207.01	33.86	189.74	29.19
Kansas	220.64	35.83	171.63	25.13
Wisconsin	210.89	33.50	212.48	31.62
Minnesota	229.36	36.41	237.46	29.83
Nebraska	214.65	34.59	193.96	26.88
Kentucky	213.87	29.66	209.60	29.70
Tennessee	200.42	34.16	192.39	29.20
Michigan	234.02	38.26	234.27	35.16
Miscellaneous	207.94	31.03	197.08	28.27
General Average	214.97	35.02	209.77	34.20

The price of pork per 100 lbs. net, for the two seasons, was for 1873–4, $5.13, and for 1874–5, $8.33, a difference in favor of the season just past of $3.20 per 100 lbs. The average value of lard for the two years, was for 1873–4, 9c., and for 1874–5, 14¼c. The total value of the western hog crop, pork and lard together, was as follows:

	Pork.	Lard.	Value.
1874–5	1,167,639,457 lbs.	190,380,607 lbs.	$97,338,826
1873–4	1,175,126,971 "	191,444,035 "	68,827,215

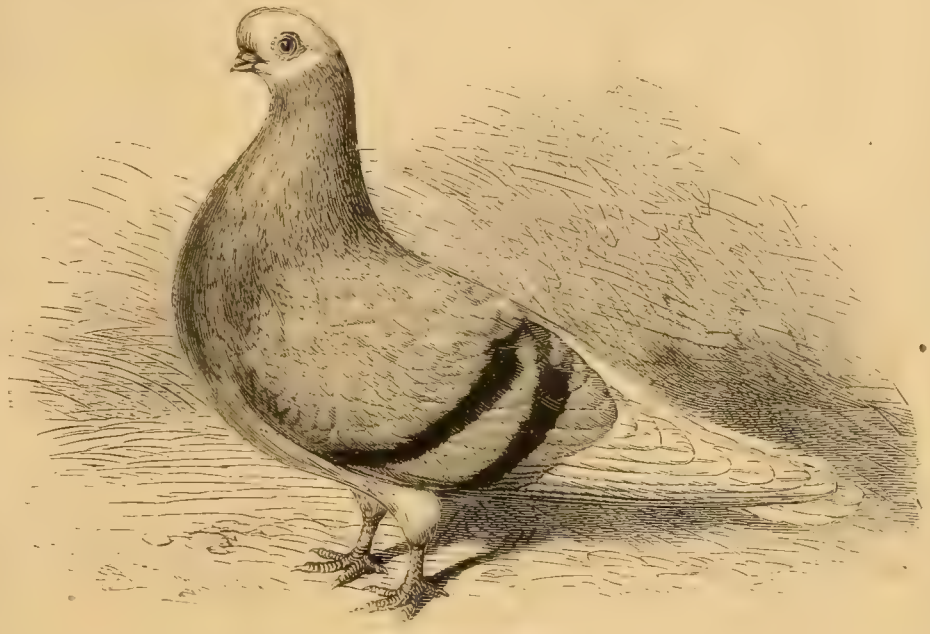
Showing an *increase* in value in 1874–5 of..**$33,511,611**

all of which has gone into the pockets of the farmers of the Western States, during the past winter.

The quantity of corn represented by these aggregate productions of pork and lard, may be estimated very nearly by taking 6 pounds of pork as an equivalent of one bushel of corn. On this reasonable estimate, the quantity of corn fed would be, in 1873-4, 227,584,596 bushels, or about one-quarter of the whole crop, producing an average value of 30¾c. per bushel, and in 1874–5, 226,513,932 bushels, or something over a quarter of last year's deficient crop, producing an average value of 50c. per bushel. The stocks of hogs on hand the last seasons were, in 1873, 21,193,300 head; 1874, 19,927,600 head; 1875, 17,245,700 head.—The large falling off in the stock of live hogs with which we have begun the present season, is a fact worthy of note by pork producers.

The Baldhead Pigeon.

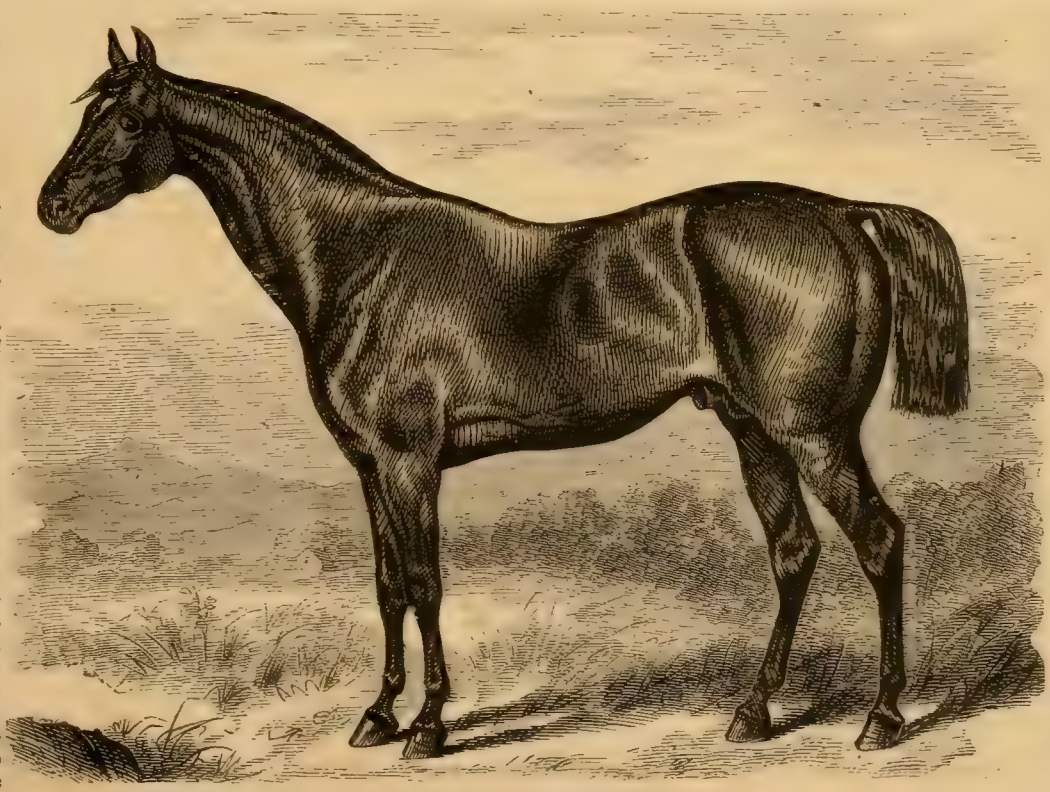
The portrait given herewith is one of a "Baldhead," which was bred in 1872, from a blue cock and a silver hen, and is an extremely good specimen of this beautiful class of pigeons. This bird has won many first prizes in England, amongst which were those at the Crystal Palace and Birmingham exhibitions. Baldheads are of various colors, blue, black, red, yellow, and the breeding of this variety is a favorite amusement with many pigeon fanciers, both here and in England. By care in selecting for breeding, they are now produced in great perfection and beauty. They are strong flyers, and their absurd antics on the wing as they tumble about in the air, whirling over and over, are very ludicrous. A correspondent of "The Country," from which the portrait is selected, states that they are very good breeders, excellent nurses for their young, easy to keep, and very hardy, living in perfect health until ten to twelve years old. These birds are becoming more popular than they have hitherto been, and the entries of Baldheads in the pigeon shows, gradually increase year by year. That they possess a certain elegance and beauty of feather, sufficient to make them attractive to fanciers, is readily seen by reference to the illustration.



THE BALDHEAD PIGEON.

A Western Stock Farm.—Horses.

A few years ago the idea of establishing a large stock farm upon the plains in the western part of Kansas, where thorough-bred stock of the finest character should be kept, would have seemed too absurd for serious consideration. But the experience of the past few years has greatly added to our knowledge of the climate and capabilities of those vast areas of land, which are covered with a perennial growth of grass of the most nutritious character. Two years ago a large tract of land in Ellis Co., Kansas, was purchased by Mr. George Grant, and stocked with a number of sheep and cattle, as an experiment. The first winter's experience proved that there was no reason why the enterprise should not be successful, and the next season a large addition was made to the stock. Some fine Short-horn and polled Angus bulls were added to the herd, and the flocks were increased to 7,000 head of native ewes, and a sufficient number of thorough-bred Lincoln, Leicester, Cotswold, Southdown, Shropshire, and Oxfordshire rams. All this stock has passed through last winter, not only with safety, but with the greatest ease and comfort, and is now in the best condition. Five hundred head of Cherokee cattle wintered in the open prairie, with the loss of only five yearlings, and there have been only ten days, upon which the thorough-bred cattle have not pastured in the open fields; these were the only days upon which the less hardy cattle needed shelter. The sheep have improved remarkably in health, and there has been no appearance of disease of any kind. The half-bred lambs yield a greatly improved fleece; the fleece of the half-bred Leicester being of the best quality, although not of the greatest length. The samples of wool which we have inspected, are of good quality, and rare evenness. The Lincoln cross produces a long, coarse, combing-wool; the wool of the Cotswold cross is finer, and that of the Leicester cross is finest. In addition to this stock, Mr. Grant has procured a fine thorough-bred imported stallion for use upon the farm. This is Flodden, a bay horse, 7 years old, sired by the celebrated Thormanby, whose death recently occurred in England. A portrait of Flodden accompanies this article. Flodden's pedigree includes Bay Middleton, winner of the Derby in 1836; Trumpater, who was the sire of seventy winners, King Herod, who produced 497 winners, whose prizes amounted to over a million of dollars, and some other famous horses. The introduction of this stock, and the successful settlement of the extensive tract of land owned by Mr. Grant, are of great benefit to the State, and to all the territory adjacent, which is subject to the same conditions of climate. The crops grown are chiefly rye, oats, and lucern; of the last 300 acres will be sown the present season. A considerable town, named Victoria, has grown up in the center of Mr. Grant's tract, and some fine residences of sandstone, which is plentiful in the neighborhood, have been built. The locality is watered by the Victoria river, and abundant water is procured from wells at a depth of 16 to 40 feet. These plains, which have fed countless buffaloes for centuries, and are covered with the buffalo-grass, afford fine pasturage for stock, but are not suited for general cultivation, or ordinary farming.



"FLODDEN."—OWNED BY GEORGE GRANT.

THINNING CORN.—Prof. Roberts, of the Cornell University made some experiments in growing corn upon the College farm last season, the results of which are valuable. He planted three plots of three-sixteenths of an acre each with corn, and thinned the hills in one lot to three stalks, another to four stalks to a hill; the third was not thinned. The first plot yielded at the rate of 160 bushels, the second 125 bushels, and the third 106 bushels (of ears) to the acre. Mr. Roberts states, as the result of many experiments prior to these, at the Iowa Agricultural College, that the heaviest crops of corn were made by growing three stalks to a hill, and that two stalks to a hill will produce more corn than five stalks. If every stalk produces an ear, and corn is planted three feet apart each way, there will be nearly 100 bushels of shelled grain per acre. To grow maximum crops of corn then, it is only necessary to grow one ear upon a stalk, and ears of such a size that a hundred of them will make a bushel of grain. In view of this it is strange that with so prolific a grain as corn, a yield of 100 bushels per acre should be considered as something almost impossible to be obtained.

Walks and Talks on the Farm.—No. 136.

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"I do not understand," said the Judge, "your position in regard to clover. I would like to have you on the witness stand with a good farmer to prompt a sharp lawyer in examining you. In your direct testimony you say 'clover is the grand renovating crop of American agriculture!' 'Raise your own clover-seed and sow it with unsparing hand?' 'You should never sow wheat without seeding it down to clover.' Nay, more," said the Judge, "you even go so far as to say that this is not enough, and that instead of the common rotation, corn, barley, and wheat, you would seed the barley with clover. You tell us that to grow a maximum crop of wheat or barley, the one chief thing that the soil requires is nitrogen. You tell us that a crop of clover contains three or four times as much nitrogen as a crop of wheat or barley, and that when we grow a crop of clover and plow it under or feed it out on the land, the soil is supplied with what wheat and barley so much need, nitrogen. Now all this is clear enough, and I thought I understood your views. But on your cross examination you say 'Clover cannot create nitrogen, and there is no evidence that it gets it from the atmosphere.' You were then asked this question: 'Suppose you had a field of wheat, half of which was seeded down with clover, after the wheat was off, the half where there was no clover was plowed. On the other half the clover was allowed to grow without being pastured. It grew so large in the fall that some of the clover plants headed out. The frost of winter cut down this clover, and it formed a mat of manure on the surface. The next spring the other half was plowed again, and summer fallowed in the old-fashioned way. The clover on the other half was allowed to grow, and did grow very large and rank. The second week in June this heavy crop of clover was plowed under, and the land was kept mellow and free from weeds by the free use of the cultivator and harrows, and finally the whole field was sown to wheat in September.' Now which of those two parts of this field would be likely to produce the best crop of wheat? The question," continued the Judge, "was plain and well put, but it was difficult to get a direct answer from you. You wanted to qualify. You said a good deal would depend on the character of the soil. If it was a light sand or sandy loam, you thought the half where the clover was plowed under would produce much the best wheat, but if it was a heavy clay you thought *perhaps* the summer fallow would give the largest yield. You did not know. You talked about the mechanical effect of the clover in ameliorating and lightening this heavy clay. You thought the clover might keep it warmer and drier, and that on the whole the chances were in favor of the half which had grown the clover. Still you would not say."

"You were then asked how much nitrogen such a crop of clover, taking roots and all, would contain. You replied, 'If the growth in the fall which rotted on the ground, and the growth in the spring with the roots, were equal, taken altogether, to four tons of clover hay, then the crop would contain about 200 lbs. of nitrogen.'" "You were then asked how much nitrogen a crop of wheat of 50 bushels per acre would contain? You said, 'Wheat contained 1.80 per cent of nitrogen, and wheat straw 0.65 per cent.' You said furthermore that such a crop of wheat would give at least 100 lbs. of straw to each bushel of wheat, and consequently the crop would contain 54 lbs. of nitrogen in the grain, and 32½ lbs. in the straw, or the whole crop of wheat of 50 bushels per acre would contain 86½ lbs. of nitrogen. You said such a crop of clover contained nitrogen enough, (200 lbs.), for three crops of wheat and straw of 38 bushels per acre. And you had before said that nitrogen was the chief thing which we required to grow large crops of wheat, worth in fact, from 25 to 30 cents per lb. And yet you hesitate to say whether the part of the field on which this large crop of clover was plowed under as manure, would or would not produce a greater crop of wheat than the other half where no clover was plowed under, and no manure of any kind applied."

"If you will allow me," I said, "I will explain."—But the Judge stopped me. "Answer the questions, sir, which are put to you. You admit that you have plowed under clover and roots which contain 200 lbs. of nitrogen per acre. Now please say, yes or no, whether that soil does not contain 200 lbs. more nitrogen per acre than the land where no clover was grown or plowed under?"—"No."

At this answer the Judge, the Squire, the Deacon, and the Doctor had hard work to repress their surprise and indignation. They thought I was trifling with them. And the Judge asked in a severe tone, "What, then, has become of this 200 lbs. of nitrogen?"—"It is in the soil."—"And yet you say the soil does not contain 200 lbs. of nitrogen. You plow under clover containing 200 lbs. of nitrogen, and you say it is then in the soil?"—"Yes. Some of it still undecomposed in the clover, and some mixed with the soil. I do not suppose there has been any of it lost."—"Please explain yourself, sir," said the Judge, with a frown.—"That is what I have been trying to do for some time, but you stopped me. If I take $200 out of my left hand pocket and put it into the right hand pocket, I become no richer by the change. I have not got $200 more money, and yet I have just put $200 into my pocket. And so if a crop of clover takes 200 lbs. of nitrogen out of the soil and you plow under the clover, the soil becomes no richer in nitrogen by the operation."

"Well," said the Squire, "why then do you advocate growing clover? Why do you call it the great renovating crop of American agriculture?"—"I speak of it as the great renovating crop of our agriculture, because it seems specially suited to our climate and circumstances; and because, especially on our limestone soils, it grows with astonishing vigor. If our land is dry, clean, and well cultivated, we can often grow large crops of clover with no manure except a bushel or two of plaster per acre. The turnip has been called the great renovating crop of British agriculture, its sheet-anchor. But it is a crop which requires a large outlay in labor and manure. On many English farms, no matter how heavily they are manured, clover can seldom be grown to advantage oftener than once in six, eight, or ten years. It may be so here in time, but as long as I can grow good crops of clover, I shall continue to do so."

"Never mind all that," said the Judge, "tell us *why* you would grow clover for the purpose of enriching the land, or, in other words, for the purpose of furnishing the cereals with nitrogen when you say that the clover returns to the soil no more nitrogen than it had taken out of the soil?"—"Because experience, observation, actual experiment, and true science, all tend to show that a crop of clover, when plowed under or fed off on the land, actually does enrich the soil for wheat and barley, and I have no doubt for oats, rye, corn, and potatoes also."

"Now you are getting on to one side of the question. We, too, know that clover enriches the land. We think it does so by getting nitrogen from the atmosphere. But you deny this."—"I say it is not proven. The facts are all the other way, and are susceptible of another and very different explanation. I believe in clover. I grow more of it than any of you. But your theory of its action will not bear the slightest examination. It will not hold water. And an erroneous theory, especially a fundamental one like this, leads to grave errors in practice. Farmers sometimes grow clover, make it into hay, and sell it, the clover roots help them to grow a fair crop of wheat. This they sell; and they sell corn, and oats, and barley, and potatoes, and timothy hay. They say, 'If we do run down our land we can easily bring it up again by growing clover.' They make a sad mistake. Clover is a crop for the good farmer, not for the poor farmer. It gathers up and utilizes the nitrogen, phosphoric acid, potash, etc., already in the soil. It does not get them from the atmosphere."

"Go on with your explanation, sir," said the Judge.—"The Deacon and I have talked this matter over again and again."—"Never mind what you have said to the Deacon. Keep to the point. We want to get to the bottom of this subject. Let me ask you again, why, if clover does not get nitrogen, phosphoric acid, and potash from the atmosphere, you so persistently advise it as a renovating crop?"

"Because clover saves these important elements of plant-food from running to waste. They are in the land. A certain amount of them are held in solution by the water which always exists in the soil. Wheat, and barley, and probably oats, corn, potatoes, and grass, require a *stronger solution* than clover. We know that wheat often yields only half a crop, simply because it cannot find in the soil sufficient nitrogen and phosphoric acid, and yet clover, on the same soil, finds much more nitrogen, phosphoric acid, and potash than is required to produce the heaviest crop of wheat. And so I say grow as much clover as possible, and either plow it under or feed it on the land; or make it into hay, feed it to cows, sheep, horses, or hogs, and take back the manure to the land. Then the wheat, barley, and other crops can get hold of the plant-food which they require. When you plow under a crop of clover you do not increase the quantity of nitrogen, phosphoric acid, potash, etc., in the soil. It was there before the clover grew. But you concentrate these important fertilizing substances. You gather them up into the roots, leaves, and stems of the clover, and when these decay in the soil the roots of wheat, barley, etc., can find food rich enough for the rapid and healthy growth of these crops."

Two years ago, the Deacon and I were talking about Mr. Lawes' remarkable experiments on barley. (Walks and Talks in *American Agriculturist*, 1873, page 134.) He has now grown 23 crops of barley in succession on the same land. Two plots have been left continuously without manure of any kind. The following table shows some of the most important results:

MANURES PER ACRE.	*Average yield per acre for 23 years.*
1. No Manure	21 bush.
2. Superphosphate of Lime	2¼ "
3. Superphosphate and Ammonia or Nitrate of Soda	49 "
4. Superphosphate and Ammonia and Salts of Potash, Soda, and Magnesia	4⅝ "
5. 14 Tons Barnyard Manure	48⅞ "

This little table is worthy of much more consideration than we can now give it. I must be very brief. Look first at No. 2 and No. 3. The only difference between the two plots is that No. 3 has had about 50 lbs. of nitrogen applied annually per acre in the form of sulphate of ammonia or nitrate of soda. This has doubled the crop. Then look at No. 5. The 14 tons of manure applied each year contains about 200 lbs. of nitrogen, and an excessive abundance of every element of plant-food, and yet we get no more barley than from No. 3. In other words, 50 lbs. of nitrogen in an available condition, give as great a crop as 200 lbs. of nitrogen in barnyard manure. The crop of barley in grain and straw, on plot 3 and on plot 5, removes from each acre about 25 lbs. of nitrogen per annum. So that in the 23 years, there has been applied to plot 3, 1,150 lbs. of nitrogen per acre. The crops grown have taken out 575 lbs., and there has been left in the soil 575 lbs. of nitrogen per acre. On plot 5 there has been applied 4,600 lbs. of nitrogen. The crops have removed 575 lbs., and there is consequently 4,025 lbs. of nitrogen left in the soil.

Now recollect that 100 lbs. of *available* nitrogen per acre would make the land so rich that the crop would probably be "as flat as a pancake." But the enormous quantity of nitrogen which has accumulated in the soil from the annual application of 14 tons of manure per acre, produces no over luxuriance of growth, and in fact gives a no larger crop now than 50 lbs. of nitrogen applied in the form of nitrate of soda or sulphate of ammonia.

What has become of this 4,025 lbs. of nitrogen? Mr. Lawes has shown that a portion of it is washed out by rains. But there is undoubtedly a large amount lying in the soil, in such a form that barley and wheat cannot take it up. But *clover can take it up.* At any rate to a much greater extent than

wheat and barley. The Deacon suggested this idea two years ago. And I am happy to say that Mr. Lawes has given us the results of an interesting experiment which shows that the Deacon was right.

The field on which this experiment was made has been cropped as follows: 1864, red clover; 1865, wheat, with artificial manures; 1866, mangles, with dung and artificial manures, crop removed from the land; 1867, wheat, unmanured; 1868, oats, with artificial manures; 1869, '70, '71, '72, barley with artificial manures. In 1872 half the field was seeded down with clover on the barley. In 1873, the half not seeded down was sown to barley again, but without manure. The other half was in clover. The barley yielded 31 bushels per acre. The clover yielded 3 tons and 48 lbs. of hay per acre. The next year, 1874, the whole field was again sown to barley without manure of any kind. The yield after the barley was 32¾ bushels per acre; after the clover, 58 bushels per acre.

This result pleases the Deacon, and ought to rejoice the heart of George Geddes. The 3 tons of clover hay have taken out of the soil 150 lbs. of nitrogen. This hay, fed to sheep, or cows, or horses, would give us manure containing about 140 lbs. of nitrogen, or as much as is contained in five or six large crops of wheat or barley. And the nitrogen left in the roots of the clover gave an increase of 25¾ bushels of barley per acre.

May I not be excused, therefore, for so repeatedly pointing out the advantages of growing clover and consuming it on the farm? We get in the two years from this field, 63¾ bushels of barley per acre, when barley is sown after barley; and 58 bushels of barley on the other half, and 3 tons of clover hay. Surely 3 tons of clover hay is worth much more than 5¾ bushels of barley. But do not sell the clover hay. I have not time now to say why, but do not do it. One more remark and I have done. Instead of sowing wheat after barley, as most of us here do, seed the barley down with clover. We shall never get rich by growing half crops of wheat and exporting them to Europe. Better grow more clover and raise more beef, pork, mutton, and wool.

We have had "good luck" with our lambs this spring. I do not like the word, but there seems to be more or less "luck" about getting good lambs. There is a cause for it, but it is not always easy to find out why lambs come weak in one case, and strong and vigorous in another. I have always had the strongest and healthiest *grade* lambs. I do not recollect ever losing more than one during the last five years, and that was an accident. But we have always had more or less trouble with the thoroughbreds. The grades would in all cases get up in a few minutes and take care of themselves. With the thoroughbreds it is not unfrequently necessary to turn up the ewe and let the lamb lie down, while we held his head to the teat and pressed a little milk into his mouth before he would suck. These sheep are high-bred. They have for generations had all their wants supplied. The object of the breeder has been to get sheep with little offal. He wanted as little as possible of the force or energy of the lambs to be used for any other purpose except to convert the food into mutton and wool. He succeeded to an extent which is truly astonishing to any one who has not studied the subject. We can easily get a lamb to grow as much in six months as many common sheep do in three years. If the lambs are a little "stupid," we must bear with them. We have made them what they are. If a farmer is not prepared to give them the necessary care, he should not raise "improved" thoroughbreds. For my part I like the business. I like to feel that these animals are artificial productions, and that they need intelligent care and attention. I like to see them grow. I like to sell a lamb for $50, and to feel that in the hands of a good farmer he can be made to bring back ten times the money. I have thought of all this when I have been sitting up at night with a ewe and "fussing" over a weak or chilled lamb. Randall says lambs that will not take care of themselves should be suffered to die. This would be a good theory if our object was to get slow-growing, hardy sheep, that produce nothing but wool, and little of that.

It ought to be understood that these high bred cattle, sheep, and pigs cannot be raised as easily as common stock. "Why, then, do we want them?" We want them to cross with common stock. Take a common sow and breed her to a high-bred boar, and you will get pigs hardier and healthier than if you used a boar of no breed or pedigree, and the pigs will be worth at least a dollar a head more at weaning time, and from $5 to $10 more, with the same feed, at killing time. In a large herd, or if the neighbors patronize him, such a boar may be the father of a thousand pigs. I do not say it pays the *breeder* to raise such a pig, but I am sure it pays to use him after he is raised. And so with sheep, I do not want anything better, hardier, or healthier than such grade Cotswold-Merinoes as I have been raising for five or six years. I do not want better mutton, and the wool brings a higher price than any other. The Deacon was looking at my flock the other day. We have six or eight of the old Merino ewes still left. We call them the grandmothers. "There, Deacon," I said, "is the grandmother; there the mother, and there the son. The son is not quite a year old. Let us put him on the scales." We caught him and examined his wool. He has two crosses of Cotswold blood, the fleece is close and heavy, nearly as long, and somewhat finer than the thorough-breds. The Deacon thought he would weigh 150 lbs. We put him on the scales, and he weighed plump 165 lbs. at less than a year old.

We then caught a two-year old grade ewe, a perfect beauty. Her grandmother was a Michigan sheep, with probably some Leicester blood in her. A common sheep that cost me 3 cents a lb. Perhaps she weighed 80 or 90 lbs. The mother was sired by a thorough-bred Cotswold, and this ewe also; so that she has 75 per cent of Cotswold blood, and 25 per cent of common Leicester-Merino. She pulled down the scales at 202 lbs., and she has had precisely the same feed as the "grandmother," which will not weigh more than 75 or 80 lbs.

A correspondent at Union, Oregon, writes to the *American Agriculturist*, and the editor refers the letter to me. The letter says: "Times are dull here; farm produce is low, wheat 50 cents a bushel, and other crops in proportion. One of the principal ways for farmers to raise cash is to breed and fatten hogs to sell to Chinamen, who work in the neighboring mining camps. The Chinamen must buy the hogs alive, and prefer small ones, from 75 to 150 lbs. We propose to go into the business of raising such pigs, and submit our plan to you for your advice. Have the sows come in say first of March. As soon as the pigs are old enough to wean, put them up and feed them all they will eat of milk, grain, etc., until about the 15th of July, or harvest time, when they should bring a good price. Have the sows come in again early enough in the fall for the young pigs to get the benefit of the stubbles, where they can run as long as they do well. Then shut up to fatten on barley, cooked or ground, until about the 1st of March, when they bring the best price in the China market. We shall use a thoroughbred boar on common sows. What should such pigs weigh, and how much would they consume, and what do you think of our plan? Farmers say there is nothing to be made in hogs at present prices, we think if the common way of feeding and breeding will pay, ours certainly will." You do not say what such choice pigs as you propose to raise will bring in the "China" market. If "John" knows what good pork is—and we suspect he does—and is willing to pay what it is worth as compared with the pork from semi-wild or half-neglected hogs, we think there is money in the business. But you will want a good man to take care of the pigs. Much will depend on this. If you keep, say 50 breeding sows, it will require the entire time of a man, and in the spring and fall he should have a bright boy to help him look after the sows with the young pigs. Your March pigs should weigh from 75 to 100 lbs. in July. The pigs after weaning, will eat, at two months old, about one pound each per day of corn, barley, or wheat. Two weeks later, they will eat about a pound and a half each per day, and the next month or six weeks they will probably consume on the average from 2 to 2½ lbs. each per day. The more you can get them to eat, the better. For this purpose it is desirable to cook the food and to feed it with good judgment. For instance, you will probably be short of milk, and you must use the little you have to induce the pigs to eat an extra quantity of food. My own plan is to feed all the cooked corn meal and middlings the pigs will eat, and then after they have taken all they will of this food, give them some more cooked mush mixed with a little milk. You should get a very fine boned high-bred boar, such as the Suffolk, Essex, or small Berkshire, and probably it will require two or three crosses from your common sows before you get pigs as fine as the Chinamen have been accustomed to. But even the first cross will be a vast improvement on the common hog. The improved breeds of pigs owe much of their early maturity, smallness of bone, and offal, and fattening qualities, to an infusion of Chinese blood. It reduced the size, but improved the quality of the coarse old fashioned English hog.

The Farm Blacksmith-Shop.

A well appointed blacksmith-shop for farm work can be procured for about $50. This may consist of a portable forge, an anvil, a vise, and the usual hammers, tongs, etc., which form the kit of tools. With these a farmer may make a bolt, or a nut, or mend a chain, or do any of those small repairs which are continually needed upon a farm. Now that machinery is coming into such extensive use, the means of repairing any trifling break, or replacing a lost bolt or nut, must of necessity be at hand. To have a mower, a reaper, or a threshing machine, break down when the hurry of work is at the greatest, may frequently occasion a loss equal to a large portion of the cost of the appliances for making an immediate repair at home. We have known a farmer in such a case to mount a horse and ride several miles to get a bolt made, that could have been made at home in ten minutes, if the means were ready, meanwhile a dozen men and eight or ten horses were idle for half a day. The same will apply to country mills, both saw and grist mills, which are often disabled for half a day or more by some trifling mishap, the real cost of which is nothing as compared to the indirect damage from delay. Some years ago portable forges were introduced chiefly for army use, but they were found of such great value that they were speedily adopted by mining explorers, railway engineers, lumberers in the back woods, and others who needed light work done at a moment's notice, and have also found their way into farm work-shops. At least, having found their value in all the first mentioned cases, the writer found one indispensable in his farm work-shop, and certainly saved its cost in one year's use. Within the past year or two great improvements have been made in these forges; a rotary fan, instead of a bellows, has been affixed to them, and our illustrations (figs. 1 and 2) exhibit them as they are now made by the Empire Forge Company, of Troy, N. Y. That shown in fig. 1 costs but $27, and is a very convenient one for farm use, or for light mechanical work. It is of such obvious value to the farmer that we apprehend it is because they, as well as their low cost, are not widely known, that almost every farm work-shop has not one. This cheap forge (No. 10) is made very light but strong, with wrought iron legs, and can be readily lifted and carried from place to place. It weighs 90 pounds. The blast is supplied by a geared rotary blower, and a welding heat can be got up in a very short time. There are no belts or leather to become hardened, cracked, and useless, by exposure. It may be carried into the field along with the reaper, or into the quarry, or the clearing, where drills have to be sharpened, and may be left out of doors without injury. The wearing parts are made of bronze, and have not required replacing after many years of work. Fig. 2 is a larger forge (No. 11), made of cast-iron, with closed top and doors to shut around the fire, and to which a stove-pipe may be affixed to carry off

sparks and prevent danger from fire. This is a very desirable forge, as it may be attached to a chimney in the work-shop, and may be used near a barn at any season without the slightest danger. It

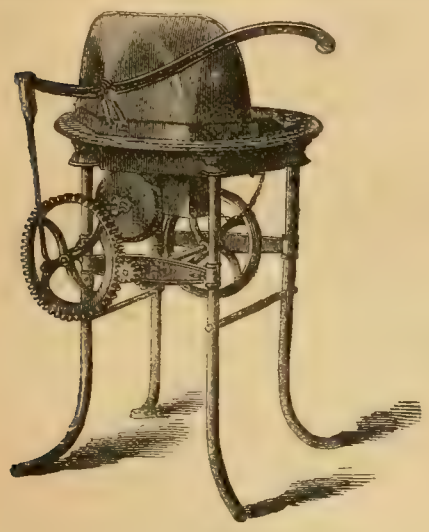


Fig. 1.—SMALL FORGE (No. 10).

weighs 160 pounds, and costs $35. It may be had with a tight and loose pulley, to be run by horse-power as well as by hand. The blast of these forges is strong enough to burn either charcoal, or anthracite, or bituminous coal, as may be convenient

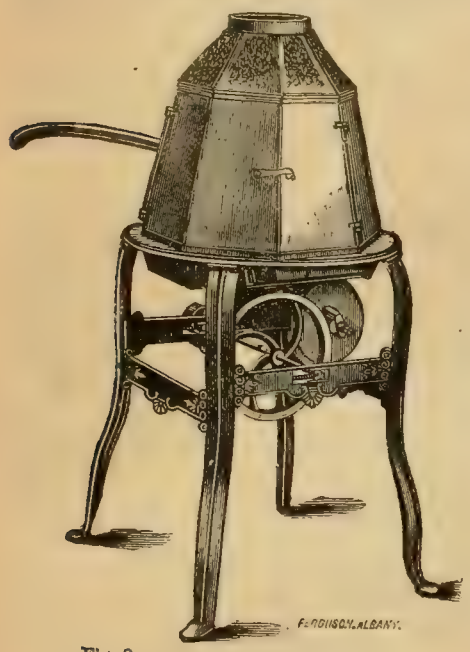


Fig. 2.—LARGER FORGE (No. 11).

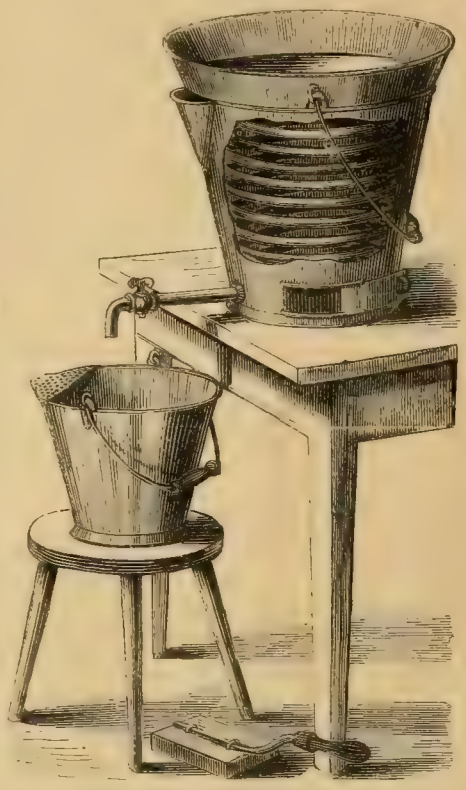
to procure. The other large furniture of the shop should be an anvil and a vise. These are as indispensable as the forge, and are useful for much work that does not need a fire. Small anvils and vises for farm use are made by Messrs. Fisher & Norris, of Trenton, N. J. The vise to be preferred is the "parallel leg" vise, shown at fig. 3, which always takes a firm square grip, whether the object held is large or small. It can be fastened to the work-bench by bolts, and a small size costs $8.00. The anvils used should be chosen for their solidity and the excellence of the face. Upon this latter greatly depends the ease with which work may be done upon it, as a light hammer will do as much work upon a good anvil, as a heavier one upon a poor one. These anvils are from 10 lbs. weight, costing $3.50, up to 90 lbs., costing $10.50, for light work, and from 100 to 800 lbs. for heavy work.

Fig. 3.—VISE.

Warming Milk for Butter.

At the various dairymen's conventions every device that promises to increase the yield of butter, or improve its quality, meets with a ready hearing, and is intelligently discussed. Among the topics considered at these meetings has been that of warming milk before setting, or "scalding," as it is generally spoken of. We can not here give the argument of those who recommend this treatment, it being nothing new, as the heating of the milk up to 120 degrees, or even more than that, has long been practiced in some of the best dairy districts in Europe. A visit many years ago to the Devonshire dairies, in England, where the famed clouted cream is produced by a method of heating, led the writer to adopt a similar plan in his own dairy. This plan was described at the meeting of the American Dairymen's Association, at Utica, in 1873, and has been probably adopted by some of those who were then interested in its description. But from the various inferior methods described at similar meetings the past winter, and from the numerous inquiries which were made by those who have no method at all, we have prepared the accompanying illustrations of the plan referred to. The general method is to place the pans upon the stove until the milk is warmed, but this obviously will only answer in very small dairies. Other methods are in use in some dairies where fancy butter is made, which are based upon the use of the kitchen stove, but these are all seriously objectionable, as requiring too much handling of the milk. What is wanted is a plan that can be operated in the dairy altogether, without help from the kitchen stove, except to procure from it a quantity of boiling water, with a heated iron, by which the temperature of the water is maintained. This is done by the use of the apparatus described in this article; this is not patented, and can not be, as it is the writer's own invention, and is here published for the first time, for the public benefit.

The purposes served by heating milk, are two-fold. All milk when drawn from the cow, possesses an odor more or less strong and disagreeable, as the food may have been strong-flavored—cotton-seed meal, or turnips—or as the surroundings of the cow stable may have been the reverse of pure and sweet; and under the most favorable circumstances, some odor is perceptible. If the odor is not allowed to escape, or is not removed, some portion of it remains in the cream and in the butter, giving it a disagreeable flavor, which can be easily detected therein by a sensitive palate. Again it is claimed that the cream from milk which has been heated, rises more rapidly and completely, and is thicker; and the milk remains sweet during a longer time in summer. These are very important advantages, and if the milk can be heated at a small cost, and with but slight trouble, they will amply repay both cost and trouble. The method consists in the use of a vessel of tin or galvanized iron, shaped like a large pail, as seen in the illustration, holding 12 or 14 qts. Upon the top of the pail, a common tin milk pan, holding some 10 quarts, is soldered, forming the top of the pail. At one edge of the pail, and beneath the pan, a broad lip is made, at the bottom of which is an orifice leading into the pail. A coil of tin-lined lead pipe, a quarter of an inch in diameter, is made to lead from the bottom of the pan on the top of the pail, to the tap at the lower part. The coil is fastened in the pail so that it is exposed in every part to the action of the hot water, which is poured from a kettle through the lip into the pail. A recess is made in the lower part of the pail, which is closed by a slide door, into which an iron heater fits snugly. The heater is a bar or piece of iron, not smaller than a common sadiron, without a handle, but furnished with two eyes or rings, by which it may be lifted into the recess made for it. This heater, which is shown in the figure, is made red hot, and is placed in its recess immediately after the pail has been filled with hot water. The slide door of the recess is then closed, and the pail can then be carried into the dairy for use. The milk, as brought from the cow-stable, is strained into the pan above the pail, and passes through the coil, in which it is heated up to 100 to 120 degrees, or even more, in proportion to its more rapid or slower passage. The milk escapes through the tap in a small stream, into pans or a second milk pail; a pail is better than pans, as when the milk is finally poured from



APPARATUS FOR WARMING MILK.

the second pail into the pans, it is thoroughly aired and freed from all remaining taint, besides it is easier to move a whole pailful of milk at once, than to move several pans at separate intervals. This plan of heating may be applied to the shallow pan or the deep can method of setting the milk.

Make Shoes for the Plows.

One of the reasons why plows are so often left in the field, after the plowing is finished, until they are wanted in some other place, is the inconvenience of

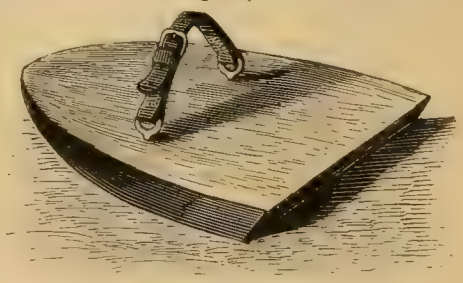


Fig. 1.—PLANK PLOW-SHOE.

moving them on the surface of the ground. They are certainly awkward to handle on the road or in a rough lane unless they are provided with a shoe; then they slip along without any difficulty. A

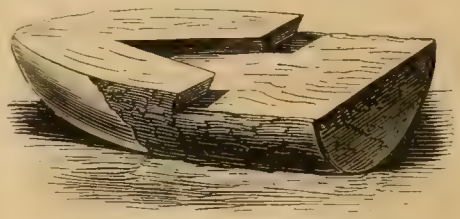


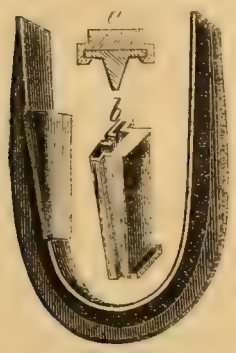
Fig. 2.—LOG PLOW-SHOE.

couple of plow shoes are shown in the illustration. One is made of a piece of oak or other hard wood plank, 16 or 18 inches long and a foot wide, narrowed and beveled at the front, and provided with

two staples or rings. A leather strap or a piece of rope is tied from one ring to the other, and the point of the plow share put under it. The plow share then rides upon the shoe and slides along the ground with ease. Another kind of shoe may be made from a piece of a split log, pointed at one end, and notched as shown in the illustration, so that the point of the plow share will catch in the notch and hold the plow to the shoe as it is drawn along. The flat shoe is the more desirable one, because when the plow is brought in to the tool-shed, it may stand on the shoe and be kept from the ground, preserving it from rust, besides it is always ready for removal.

A Useful Clamp.

The clamps in general use by mechanics, and which are tightened by screws, are slow in operation, and are very much in the way in some kinds of work. A form of clamp that is unobjectionable in this latter respect, and that is instantaneous in operation, is here illustrated. It may be made of cast or wrought iron. In the former case, any mechanic who wishes to possess them, may readily cut the patterns out of wood, and have as many as he wants very cheaply cast of the size he needs at a foundry. It is in shape similar to an elongated horse shoe, with a flattened face inside, spread out at the edges, and tapering in thickness to the points. A ridge or flange at the back of each arm, gives strength and rigidity. The arms are not parallel, but one diverges somewhat from the other. A slide tapering from end to end, in exactly the same proportion that the one arm diverges from the other, fits upon the diverging arm. Its face is made parallel to the opposite arm, but as it is moved upon the diverging arm, it recedes from or approaches the other one. Thus by driving it down, it is made to clamp instantly anything placed between the arms, and when it is driven up, it releases it at once. The illustration shows the clamp complete; at *a* it is shown in section in such a manner, that the mode in which the slide fits upon the arm is seen. This slide may be made with a projecting heel, as seen at *b*, in which case a blow upon the curved part of the clamp will tighten it upon the work held by it. The contrivance will be found useful in blacksmiths and carpenters' shops, as well as in the farm work-shop.



CLAMP.

Sawing Wood by Horse-Power.

The accompanying illustrations of a machine for sawing wood by horse-power, have been prepared in accordance with the requests of several correspondents. Figure 1 represents a table upon which the wood is placed on a sliding carriage, and pushed up to the saw. Figure 2 is another device, in which the wood is placed upon a hanging carriage, and is allowed to be pressed against the saw almost wholly by its own weight. The last named we have found to be preferable, as it works with greater ease, and is safer from accident. The tables are stoutly built of 4 x 4 oak or maple scantling, morticed together, with tops of one inch oak boards, closely jointed. There are two shafts, one upon the lower part of the table carrying an 8-inch pulley upon which the belt from the horse-power runs, and a second pulley 22 inches in diameter, made to act also as a heavy balance wheel, from which a belt is run on to the saw pulley, 6 inches in diameter, upon the second shaft, which is just below the top of the table. The saw is 28 or 30 inches in diameter. This latter shaft should run in thimble boxes, and should be as short as possible, 12 inches being a sufficient length; it will then run steadily without any side motion. So far the construction of both tables is alike. That shown at figure 1 has a sliding carriage, which runs upon grooved rollers traveling on hard wood rails, and is drawn backwards by a cord attached to a hickory spring, upon the lower part of the frame, or to a weight which hangs near the corner post. The carriage runs only upon one side of the saw, and the wood is laid upon it with so much projecting as it is desired to cut off at one stroke. The saw is so much exposed that if the operator is at all thoughtless or careless, he may lose a finger or two before he knows it, and it is therefore objectionable for any but a skilled mechanic. Its chief advantage is that by removing the carriage and putting another saw upon the arbor, boards may be ripped, and other similar work may be done. The frame shown in figure 2 is perfectly safe if used with ordinary care, or without recklessness. It is shown in detail at fig. 3. It is hung upon an iron rod which passes through iron or wooden boxes or sockets upon the top of the posts. These posts are made to lean forward, so as to throw the frame sufficiently from the edge of the saw when the wood is laid upon it, that the saw may not be struck suddenly. A catch may be placed upon the left hand post to keep the frame from swinging against the saw until the operator is ready; when the catch will be pushed back with the left hand while holding the wood with the right, so as to allow it to come into easy contact with the saw. A very gentle pressure is all that is required to carry the frame past the saw, and to cut the wood. The severed portions are thrown off with the right hand, while the left conducts the frame into its forward position again. Then the wood is shifted along the frame by the mark of a guage upon it, and the operation is repeated. With an elevation of 3½ inches to a foot, of a one horse tread-power, or a two-horse-power with one horse, and pullies and saws of the sizes here mentioned, one cord of wood not over 8 inches thick, can be cut "once in two" in an hour; or half a cord can be cut "twice in two," in the same time. It may here be mentioned that by splitting wood fine before it is sawed, a great saving of time is effected, not only in the sawing, but in the splitting; for it is easier to split one piece four feet long, than two pieces two feet long, or three pieces sixteen inches long, and the amount of handling after splitting, is less in the first case than in the other cases. The sawing is also more rapid, inasmuch as the accumulated force or velocity of the saw and machinery, is exhausted before a thick stick is sawn through, and the motion becomes very slow, often obliging the operator to withdraw the wood until the speed is recovered, which never happens in sawing wood that has been split thin. This is not generally known, or if known is usually neglected. Proper lubricating of the bearings and boxes is very important. For the boxes, sperm or the best lard oil only should be used, and tallow for the thimble boxes. A sharp saw is also an absolute necessity for easy and rapid work, and the frequent moderate use of the file is advisable, rather than an occasional thorough filing, which uses up a saw as fast as many moderate filings. This rule will apply to many other sorts of tools and cutting machines as well as saws.

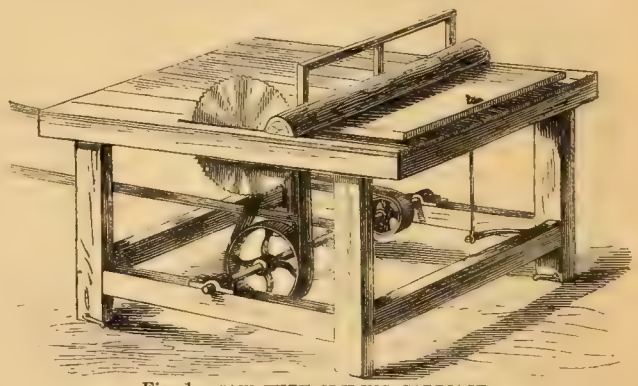


Fig. 1.—SAW WITH SLIDING CARRIAGE.

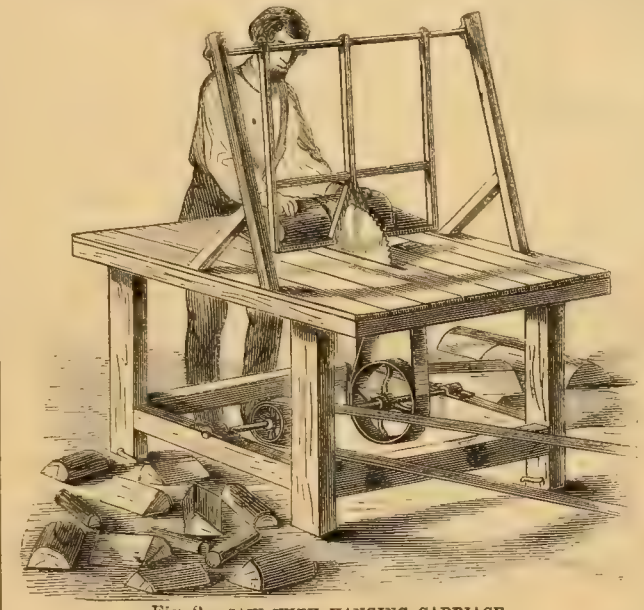


Fig. 2.—SAW WITH HANGING CARRIAGE.

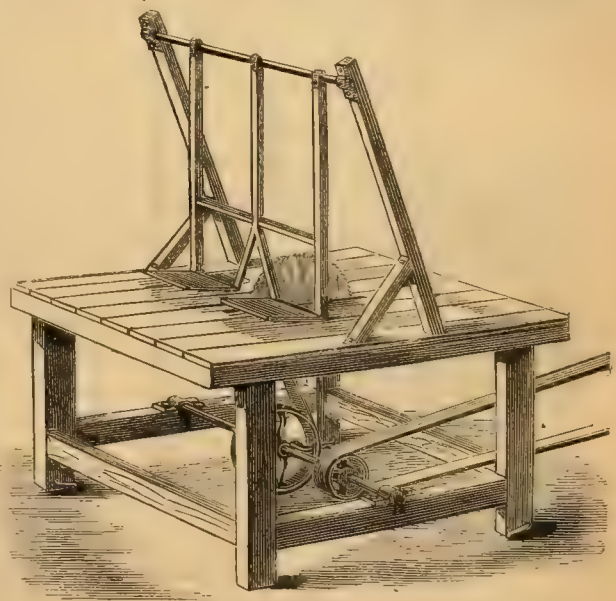


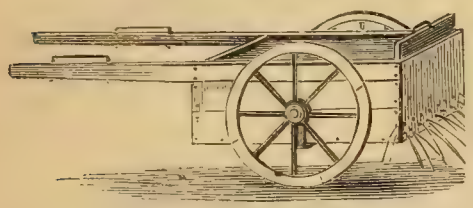
Fig. 3.—HANGING CARRIAGE—FRONT VIEW.

COUNTERFEIT PEKIN DUCKS.—Almost every thing is counterfeited, as well as greenbacks, and eagles — even ducks, much humbler birds, come in for their share of misrepresentation. Aylesburys, with yellow bills and Rouens, with disqualifications, are put off upon the unsuspecting, as purely bred birds. The Pekins, though but just introduced, are already crossed with other varieties, and

dishonest men are strongly tempted to sell them as purely bred birds. The Pekin drake is so strong and vigorous that he marks all his offspring, and the crosses with Aylesburys, Rouens, and Black Java, which have come under our observation, are invariably increased in size by the Pekin blood. The Aylesbury crosses, though all white, are readily distinguished by the lighter color of their bills, the smaller neck, and narrower build behind. The Rouen crosses come out often pure white, and the fraud is not readily detected. The practiced eye, however, would notice the different shape behind. The true safeguard against these and all similar frauds is to buy only of responsible parties.

Cart for Liquid Manure.

A "reader of the *Agriculturist*" sends a sketch of a cart for spreading liquid manure upon meadows or gardens, which is very easy to make and

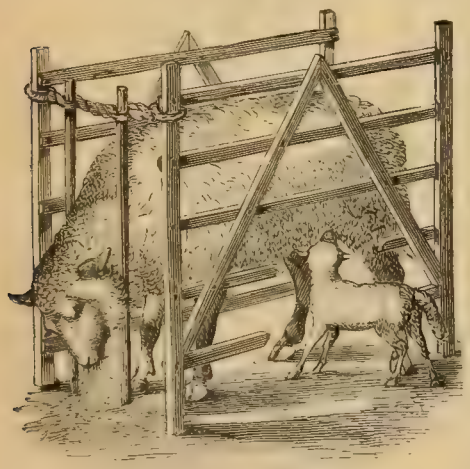


CART FOR LIQUID MANURE.

handy to use. It is a box made similar to a common box cart, but water tight, and with two tail-boards. The tail-boards work in tight fitting grooves, with not over one inch between them. The outer tail-board has several small holes bored in it, as shown in the engraving, through which the liquid manure escapes when the inner tail-board is raised. The cart is hung upon a bent iron axle, so as to bring it near the ground. The cart body is rendered water-tight by making the joints with tongue-and-grooved boards, and fitting them together with tar or oil paint. After giving the interior a thorough coat of tar, a second bottom of thin boards is put down with screws or wrought nails, while the tar is soft. This cart may be used for many purposes about the farm, such as gathering roots, moving manure, and similar services.

Care of Lambs.

The usually gentle sheep can be remarkably ill-natured and obstinate when it chooses so to be. These peculiarities often lead to an unmotherly conduct towards their lambs, many of which would be lost were not these untoward propensities in their dams watched and overcome. In every flock there will be some ewes that will disown their lambs, and resist all but forcible means to com-

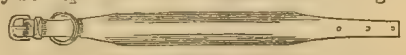


PEN FOR EWES.

pel them to perform the necessary nursing to the helpless creatures. In such cases various expedients are adopted to overcome their dislike. Small, close darkened pens or stalls, in which the ewe and the lamb alone may be confined together, will be found effective in bringing the mother to own her lamb. The ewe in such a pen, can not escape from the lamb, and if she is held twice a day to allow the lamb to suck, it will manage to procure enough at other times to keep it thriving. After a few days' confinement, the ewe's dislike usually wears off. When she is more than usually vicious, and attacks the lamb with head and feet, a common practice amongst careful shepherds, is to put the ewe in stanchions in the pen. These are made by driving two stakes into the ground so close together that the ewe's head can not slip from between them, and after pressing them apart, and securing her neck between them, they are tied together by a hay-band or a piece of cord; thus confined she can reach her feed placed before her, but can not turn to attack the lamb. The pens may be made of hurdles driven into the ground, or the floor of the sheep shed, about two feet apart, as shown in the illustration; a portion of one hurdle is broken away to show the lamb. The lamb can creep under the bars and find room enough to get about. If the ewe lies down rather than let the lamb suck, as some obstinate ones will do, a bar of wood may be put under her belly from one hurdle to another, and resting on the bars, so that she can not lie down until it is removed. It is needful for the shepherd to visit the ewes two or three times a day and see that the lambs get all the milk the mothers may have. With the help of these contrivances, perseverance and gentleness will bring the ewes to their duty in a short time.

A Hitching-Strap for a Horse.

The most secure method of hitching a horse is by a halter and neck-strap. A horse thus fastened can do no injury by flying back, as some will habitually do. The strap and halter is easily carried, or it may be kept on the horse without interfering with

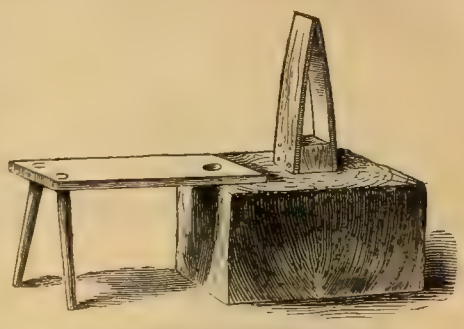


HITCHING STRAP.

the harness, and is as easily and quickly hitched in this way as in any other that is not so safe. The strap is 32 inches long. The flat part is 8 inches in length; the center, which is rounded or not, as may be desired, is 18 inches, and the end to which the buckle is affixed, is 6 inches long. A ring is secured to the strap about 2 inches behind the loop of the buckle. The form of the strap will be seen in the illustration. It is made of strong harness leather.

Mending Harness.

"A stitch in time" in the harness, at this season, will probably save considerably more than the proverbial "nine" when the busy season commences. To mend harness, the first thing needed is a clamp for holding it. A very good clamp may be made of a stave of a flour barrel cut in two in the middle. A small block with two sides beveled is fixed on the top of the larger block, and the staves are screwed firmly to it, as in the engraving. Screws are to be preferred to nails, which would be liable to split the staves. The upper end of each stave is smoothed and beveled so as to take an even and firm hold of the leather when it is slipped between them. Fine copper wire is a better material with which to mend harness than thread, and is much more convenient in use. A roll of this wire should be kept on hand. Rivets and burrs should be used for splicing traces or heavy parts of the harness. A few of these, with a punch and a light tack hammer for clenching the rivets, should form part of the tools, and a straight awl should be procured for making holes in the leather when the original holes have become filled up or worn so as to be useless. A seat may be made by fixing two legs to a piece of board about two feet long; the other end will then rest upon the block when it is in use. When not in use it may be hung up on the wall of the tool-house by a hole in the end. Such a harness-mending apparatus, in lack of a more costly "kit" of tools ought to be kept in every farm workshop. A strap may be mended in two or three minutes for one cent, that would cost ten cents at the harness makers, and the loss of time; and thus in one



CLAMP FOR HARNESS.

year a man might save the whole cost of a volume of the *American Agriculturist* in this way alone.

Cisterns—Lessons of the Drouth.

We heard great complaint of scarcity of water in many parts of the country during the winter. We did not have the usual fall rains, and the ground froze to an unusual depth, so that the winter rains remained upon the surface in the shape of ice, or ran off into the streams. Some springs gave out, and the streams in some instances froze to the bottom. Pipes that had escaped injury for twenty years, were frozen solid, and many farmers have had to carry water long distances for household use, and for stock. The inconvenience and expense will not be wholly lost if it leads farmers to provide cisterns near the house or barn, in which a large supply of water may be stored for just such emergencies. Stone, lime, and cement, are cheap in most parts of the country, and with these, any man of average skill can make a cistern that will store all the water needed—generally the rain water from the roof of barns, if saved, will supply all the stock kept upon the farm. In many cases, the cistern is most conveniently located in the bank, immediately back of the wall to the barn cellar, and the water can be drawn through a faucet at the bottom into the trough for the cattle. In other cases, the cistern could be made in the yard, and the water be drawn by an endless chain or pump. Those who have suffered inconvenience through the past winter, are just at this time in a good frame of mind to consider the advantages of a cistern. There is money in it for the purse, and a great deal of comfort for both man and beast.

Pens for Calves.

There is nothing in which we are so generally deficient in our farm arrangements, as in the treatment of our young stock. This neglect is most frequent and conspicuous in the case of calves. Just now, when the warmth of the spring sun adds to the

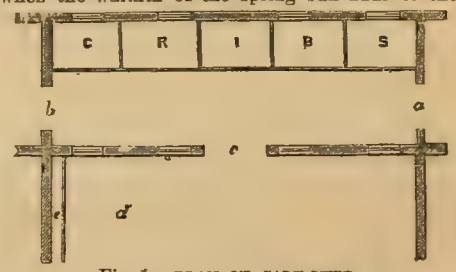


Fig. 1.—PLAN OF CALF-SHED.

distressed appearance of last year's calves, that have been wintered in a cold shed, or in a partly sheltered yard, their poor condition is made relatively worse by the sleeker state of the cows, which have had all the good treatment that could be afforded them. Nevertheless these young animals are those by which the dairy is by and by to be replenished. It is a mistaken idea, although it is a common one, that exposure to cold hardens the constitution of a young animal, and that by half starving a calf, the tendency to take on flesh and fat, so much dreaded, or pretended to be dreaded,

by some dairymen, as antagonistic to good milking qualities, is prevented, and good dairy cows are thus made. The production of milk is a heavy drain upon the system of the cow, and a sound constitution, perfect digestion, and vigorous health are needed to sustain it. Exposure and spare feeding of a cow do not tend towards these conditions. Amongst the progenitors of the present highly valued "Duchesses," were remarkably prolific dairy cows, and the heavy milking Short-horns, were, and are so made by the very best of feed and care. It will pay to treat a native calf well, as it will pay to treat well a pure blooded calf of any of the choice breeds, and as the native stock greatly outnumbers the pure bred stock, it is very important that they should receive equally good care as the more costly and fortunate animals. Few farms have a well appointed calf-house, but we know from experience, that nothing upon the farm pays a better profit on its cost, than such a house. Its cost need be but very trifling. A good, comfortable house to accommodate 20 calves, may be put up for $100 and upwards, according to its style or finish. The cheapest, if it is only substantial, is as useful as the most costly. The object sought is profit, and therefore no unnecessary outlay need be made. It

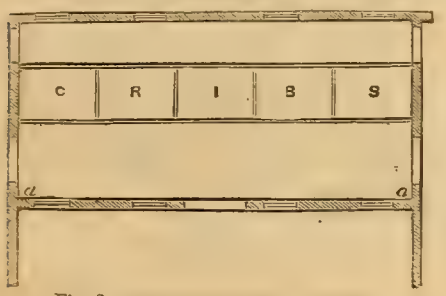


Fig. 2.—SHED WITH TWO PASSAGES.

is best to have the house divided into separate pens or cribs, the least size of which should be 30 square feet, for each calf. Double pens to hold two calves, are objectionable for several reasons. Herewith we give plans of some excellent calf pens, which we find in an English journal, "The Country," and which are designed by a well known agricultural architect. These houses are divided into small enclosures or cribs, of the size before mentioned. In the plan seen at fig. 1, these are arranged against the wall, and are well lighted by windows. In front of the cribs is a broad passage, into which the doors of the cribs open. Doors, at *a* and *b*, open from this passage outside of the building, (also seen at fig. 4), and at *c*, into the yard *d*, where the calves may be turned out for exercise. In the yard there is a feed trough, at *e*. Four windows in the wall between the passage and the yard, give ample light. It is important for the health of young stock, that there should be plenty of light and fresh air in the pens provided for them, and in the plans these requisites are amply supplied. In fig. 2 a passage is provided in front of the cribs, for the purposes of feeding only, and that in the rear

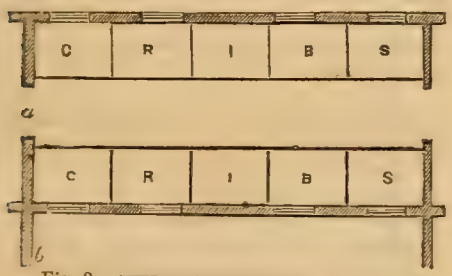


Fig. 3.—SHED WITH PASSAGE IN CENTER.

is used only for cleaning the cribs and moving the calves. In other respects the plan is similar to that shown in fig. 1. In fig. 3 the cribs are arranged on each side of the passage, and the yard is reached through the door, *a*. Figure 4 is an end elevation of the building, showing the outer door, *a*, the drains in the floors of the cribs, *b*, and the partitions between the cribs, *c*, *d*. The floors of the cribs, as well as of the passages, should be of cement. The former are intended to slope from each side of each crib to the center, where there is a small grated drain, by which the liquid waste is carried off. The partitions are made of lath, so as to offer no impediment to perfect ventilation. The

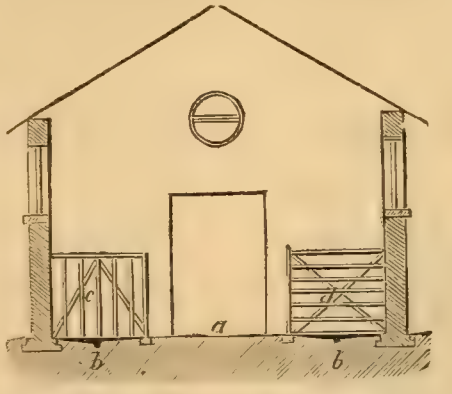


Fig. 4.—END-SECTION OF CALF-SHED.

cribs may be provided with feed and drinking troughs, or pails may be used. The latter are preferable, especially when the calves are young and are fed upon sweet milk, but it is always advisable to have the feeding utensils sweet and clean. Calves are very sensitive to the evil influences of food that has been allowed to ferment and sour, and though they may thrive upon sour milk, yet a high degree of acidity is almost certain to produce diarrhœa and sickness. A small box in which a quantity of powdered chalk is kept, which they may lick occasionally, would be a useful addition to the furniture of the cribs. The front of the cribs is also of open work, similar to that of the sides. The hinges of the doors of the cribs are of wood. The doors are barred the same as the front and sides. The upper and lower bars of the doors are extended, as are also the bars in the fronts, which meet the extended bars of the doors. Holes are bored through these extended bars, and pins of hard wood are inserted. The doors, when opened and closed, are made to swing upon these pins.

Sheep-Raising in Virginia.

Having read the articles in the *Agriculturist* of November and February last upon "Sheep-raising in Virginia," I ask you to allow me to come to the rescue of Orange Co., as I think that your associate must have gathered his information on the subject at as long a distance from Orange C. H. as he did from Alexandria. I have been in the market for sheep since we came here in 1871, and up to this time have not been able to buy any healthy sheep for less than $3 per head. We have a flock of over 300, and should be very glad to add to that number at $3 per head for fair stock. Our land is well adapted to sheep-raising, and our short winters enable us to send our early lambs to market at least three weeks ahead of New York state. The majority of our farmers let their sheep run out all winter, and of course have to furnish "rations" occasionally for some hungry dogs, but as I have profited by the advice given in your valuable paper, and have my flock under lock and key every night, the result is that I have not lost one by dogs. Our enclosure is 100 feet square, with posts ten feet high. We have 12 feet in width on three sides covered in with a pointed roof, making a covered enclosure 12 by 300 feet with a good loft overhead for fodder. The front side is a fence 10 feet high with double doors in the center, making the enclosed yard 76 by 88 feet, which we divide off by movable hurdle fences as required, giving sufficient room for feeding purposes in each division, and all accessible with double teams to supply fodder or remove manure, and this makes us secure from dogs, thieves and storms.

In regard to our farms, I am satisfied that the land is as easily improved as the average of farms in New York state or New Jersey, and that our crops will compare favorably with those under the same treatment. In walking over our farm recently with a friend from New York state, I pointed to the poorest portion of our farm, and asked him what that field of about 100 acres would be worth for farming purposes if located in New York, say 300 miles from the city, the land to be of the same quality and in the same condition, and he replied not less than $75 per acre. I then asked him why it was not worth as much for farming purposes here as in New York state. Our winters are about a month shorter at each end. Our farms are much better watered. Our labor about one-half the price, and as good as foreign labor, and our markets equally as good and as accessible. The result of my experience confirms me in the opinion that four years since induced me to move here from New York: "That no state, north or west, holds out more inducements for farmers with sufficient capital to purchase stock and work their farms than Virginia." Our farms are too large; my next door neighbor has over 3,000 acres. Our farm is but about 2,000. We use steam power for threshing grain, shelling corn, grinding flour and meal, cutting fodder and sawing our lumber and firewood, and with such large farms it pays to do so. If your associate will give us a call on his next "tour of observation" through our State, I think that I can show him a sufficient number of good farms in this vicinity to induce him to carry home a more favorable report than his last. N. B. Our farm is not for sale. H.

ORANGE C. H., VA.

A Way of Breaking Colts.

In the *Agriculturist* of September, 1873, we illustrated and described a method of breaking colts to harness, which, however, was incomplete, in that the driver, having no way of riding, had to walk behind the colt. A better method is here illustrated, by which the driver may ride, and have the colt completely under control. The rig is made of two long, light, but strong hickory poles, bolted to the axle of a light wagon or sulky. These are fastened together by light tough hickory saplings, "whipped" to them by stout cord, wire, or hoop-iron in three or four places. A foot board is fastened to them, and a light seat. The poles project in the rear beyond the wheels several feet, and at the end of each there is fastened a bent sapling, in the shape of an ox-bow. These reach to within a few inches of the ground. Their purpose is to prevent the colt from rearing if he feels so disposed, and they do this very effectively by striking the ground, and throwing the whole weight of the "rig" and the driver upon him whenever he makes the attempt. The breaking sulky, as it may be properly called, is seen at fig. 1. In the engraving given on the following page is seen a method of preventing the colt from kicking. It consists of two ropes which are fastened to the check rein, and passing through loops or rings stitched to the back straps, are fastened to the shafts. If the colt attempts to kick, his head is thrown up, and as the two things can not be done

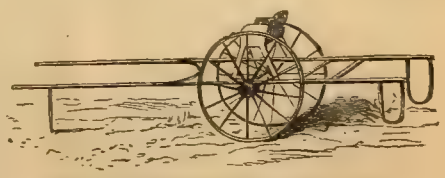


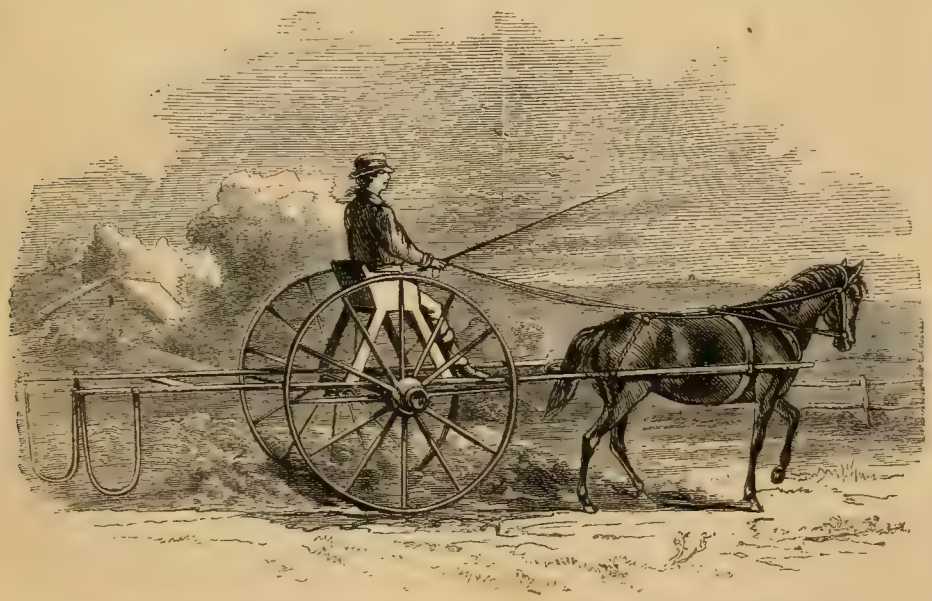
Fig. 1.—BREAKING SULKY FOR COLTS.

at the same time, he is simply prevented from kicking. However fractious a colt may be, he can do no harm in this rig, either to himself or the driver, and if patience and good temper are preserved and exercised, the colt will come to his work as soon as he finds what he has to do. The breaking should be done on a good, smooth, level road or track, and without any noise or hurry, keeping the animal easy, in good temper, and not tiring or worrying him. If the colt has been well treated and handled up to this time, he will probably go right off without any trouble or hesitation in this sulky, and if he does not at first, if he is given time, he will soon find out that he can do no mischief, and will not be likely to persevere in his attempts to do it, if treated as here indicated.

Tuberous-Rooted Begonias.

It is not our custom to highly commend a plant unless we have had some personal experience with it, but sometimes, in regard to recently introduced novelties, we are obliged to rely upon the representations of others; in such cases we distinctly give the sources of our information, which are usually European, and the reader can decide whether the plants appear to be worthy of trial. Not long ago Messrs. B. K. Bliss & Sons handed us some tubers, which we could not recognize as any that we had ever seen before, and we were quite delighted to learn that they were the tubers of some of the new Hybrid Begonias, about which so much has been said in the European journals. Several years ago there were introduced from South America a number of species of Begonia, quite different from those heretofore cultivated in greenhouses; they have tuberous roots, and annual stems which die down after the flowering season is over, and the tubers have a season of rest. The foliage presents a variety of form and color, and the flowers, which are produced in great profusion, are distinguished by their great size, and often elongated bell-shape, often with a marked difference between the male and female flowers in size, shape, and duration. The most conspicuous of these species are *Begonia Boliviensis*, with bright red flowers, *B. Vietchii*, vivid vermillion color, *B. Pearcei*, bright yellow, and *B. octopetala*, with large white flowers. *Begonia Vietchii* was found on the Andes, at an elevation of over 12,000 feet above the sea, and with some others has proved entirely hardy in Europe. Several florists in England and upon the Continent have hybridized these species, and again crossed the hybrids, and have thus produced a great number of forms, of which the European catalogues offer some fifty named hybrids, presenting a great variety of colors, such as orange, salmon, scarlet, blush, rose, pink, and crimson, with numerous intermediate shades, and they promise to become exceedingly popular plants, both for the summer decoration of greenhouses, and for the open border. The ordinary greenhouse Begonias are divided into those grown for the great beauty of their leaves, such as *B. Rex*, and its allies, and those cultivated for their flowers, of which *B. fuchsioides* is an example. These newer kinds have been variously called Flowering Begonias, Handsome-flowered Begonias, and New Hybrid Begonias; Tuberous-rooted seems to be the most descriptive name, as it includes the original species, and the hybrids which have been derived from them. Besides the bulbs, which are as yet quite scarce, seeds are offered for sale, from which it is likely that entirely new forms will be produced. Not having raised these from seeds, we can only repeat the directions given in the European journals, to sow very thinly in a pot of rather sandy soil, and cover very lightly; when the plants are large enough to handle, they are potted off singly into pots of light, rich soil. Those which flower in pots have the stems cut away when the foliage begins to fail, and the pots turned on their sides to keep the tubers dry until spring. The tubers of those flowering in the open ground, should be lifted at the end of the season, and preserved in dry sand or dry moss. Having seen some of the species from which these varieties are derived, we are prepared to see some of the hybrids sustain the claims made for them abroad. Mr. Bliss, who saw them in Europe, thinks they are destined to make a sensation among the lovers of flowers in this country, as we may hope they will be more brilliant in our climate than in that of Europe. It will be necessary for the bulbs to be more abundant than they are at present, before we can venture to test their hardiness, which in the northern states, at least, can hardly be hoped for. In August last one of these hybrids in the grounds of Messrs. Veitch & Son, (Eng.), which had been out for the three previous winters, formed a dense mass two feet high and three feet across. The engraving gives an idea of the habit of these Begonias; this one has bell-shaped flowers; in others the flowers are cup-shaped and larger in proportion than these.

TUBEROUS-ROOTED BEGONIA.



A SULKY FOR COLTS, SHOWING ANTI-KICKING ARRANGEMENT.—(*See preceding page.*)

The "California Nutmeg"—Torreya.

After the wonderful discoveries of gold in California, people were ready to believe anything that might be told of that country, and stories of mines of soap, cinnamon trees, and trees loaded with nutmegs, found ready credence. Indeed it was insisted that the genuine East India nutmeg grew there, and the production of this spice was looked upon as one of the future resources of the country. Happening to be in California at the time the nutmeg was much talked of, and but little known, we came in contact with the indefatigable collector, Mr. Lobb, who had just succeeded in finding the trees, and in gathering some of the fruit, the knowledge of which had heretofore been derived entirely from the wild stories of prospectors and miners. The fun had by Mr. Lobb, the lamented Dr. Randall, and the writer, in testing this wonderful nutmeg, will long be remembered as among the pleasant incidents of botanical exploration. We tried very hard, in various ways, to make it taste or smell like nutmeg, but there was an uncompromising flavor of turpentine, that the most prejudiced could not ignore; we never tried the nutmegs said to have been made in Connecticut, but if, as alleged, the best makers used sassafras wood, we have no doubt as a spice they would be far preferable to the California product. The "nutmegs" collected by Mr. Lobb, went to England, and the tree was described by Sir Wm. Hooker as *Torreya Myristica*, but before that publication appeared, a Mr. Shelton had taken specimens to Doct. Torrey, who recognized them as belonging to a genus named after him many years before, and he described

A CHARLESTON SOUP-BUNCH.—(*See page* 186.)

the tree as *Torreya Californica*, a name which having priority of publication, though European writers do not seem to be aware of it, must take precedence of that of Hooker, who in giving the specific name, recognized the name of nutmeg (*Myristica*) given it by the Californians. We were led to notice this tree, from the fact that it last year fruited in France, in the celebrated nurseries of Thibaut & Keteleer, and a fruiting branch of the natural size was given in a recent Revue Horticole, whose engraving is here reproduced.

"CALIFORNIA NUTMEG."—(*Torreya Californica.*)

The genus *Torreya* was established nearly 40 years ago by Arnott, from specimens of a fine tree in Florida, which he called *T. taxifolia*; it belongs to the sub-family of the yews, but as compared with the true yew, the pulpy envelop surrounding the seed is exceedingly thin. It is hardly necessary to say that the genus was named in honor of the late Doct. John Torrey, a name held in loving reverence by every American botanist and lover of native plants. Since the Florida species was made known, at least three others have been described: *T. nucifera*, of Japan, *T. grandis*, of northern China, and *T. Californica*, of our own Pacific coast; there is possibly another in the Bogotan Andes, but this is not well established, but without this all Americans should be glad that the genus bearing this precious name should have so wide a range. In Europe the *Torreyas* are highly valued in cultivation, but they can hardly be said to have had a fair trial with us, as is often the case the Florida species is much more readily procured abroad than in this country, and this is hardy in a more severe climate than that of New York City. There is now on Central Park a tree of this species which is interesting, and may be regarded as historical in its associations; it (or the seed) was brought from Florida, by the late distinguished Maj. Le Conte, and was cultivated for many years by New York's earliest florist, the late James Hogg, (father of the present editor of the American Garden), and was at length removed to Central Park, where we hope it may long survive. Though this is a native tree, it is more difficult to procure than one from the Himalayas; wishing a specimen, to replace a lost one, we were obliged to send to Europe for it. Of the two Asiatic species we can say but little; of the Californian *Torreya* we had a small specimen, but in the winter of a few years ago, when native red-cedars and such trees, were killed in the spot where they had stood for 50 years, this went to the brush heap with many other treasures. In California it makes a large tree, according to that State's most indefatigable explorer, Dr. Kellogg, it grows in the Sierras at least 100 feet high, and with a diameter of 15 inches, furnishing wood of great hardness and durability. The tree which fruited in France, was about 15 years old, and to translate from M. Carrière's article, it "is one of the handsomest trees that one can see, and possesses all the qualities which should make it sought for,"—"it is nearly 6 meters (about 20 ft.) high, and the stem is furnished from the base to the summit, the branches so near together and covered with leaves, that it forms a compact mass of green with a very fine effect." It is hoped that experiments may show that this fine evergreen will be hardy with us; at all events should it get fairly into commerce, and not be hardy at the north, it can be enjoyed by our friends in the southern states.

A Double Bedding Lobelia.

When Mr. H. E. Chitty, of the Bellevue Nursery, Paterson, N. J., returned from Europe last summer, and told us that he had brought over, among other varieties, a double blue lobelia, we were disposed to pooh-pooh at it. Doubling is all well enough with some flowers, but others are better single, and among these we thought were the lobelias. "Wait until you see it," was his reply. He remembered that there was but one way of convincing us, and in due time there came a couple of plants, which have been in the greenhouse all winter, and—well, we give it up. This double lobelia is better than a single one. This variety originated as a chance seedling in the nurseries of Messrs. Dixon & Co., Hackney, London, in 1872, and was first exhibited at the exhibition of the Royal Hort. Society early in 1873, where it received a first class certificate. It is given in the catalogues as *Lobelia pumila flore-pleno*, which will do well enough for a name until we have a better; a dwarf strain of the old *Lobelia Erinus*, has been called *pumila*, and this plant looks as if it might belong to that. Its habit is even more dense and branching than the well known sort; it has a great disposition to spread side-wise, and but little to run up, at least while under glass; its flowers, which are abundantly produced, are handsomely double, and remind one at once of miniature double Larkspurs, of a dark blue, inclining a little to violet. While we are much pleased with what we have seen of this plant, it is but fair to say that in England opinions differ very widely as to its merits; while some of the writers for the journals state that it has been a sore disappointment, and even a fail-

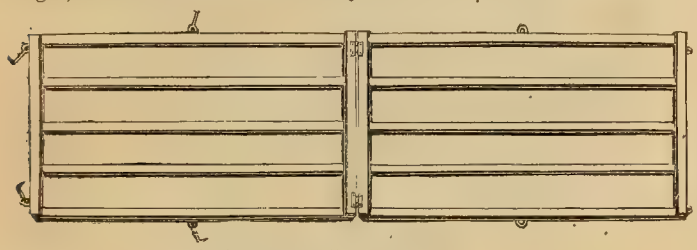
NEW DOUBLE DWARF LOBELIA.

ure, others are equally positive in its praise. On the continent it seems to have made a better record, and the journals speak highly of it. How it will behave in the open ground here, remains to be seen; if it only does as well as the single *Lobelia Erinus* and its varieties, we shall have no reason to complain; the original species being from the Cape of Good Hope, we shall expect this to be more at home under our bright suns, than in the duller climate of England. At any rate, if it does not serve us well in the border, there is no doubt that as a pot plant, and for vases and baskets also, it will prove one of the best of recent introductions. We thank Mr. Chitty for convincing us that a lobelia can be both double and handsome.

Straw Mats—Quickly Made.

BY H. SACKERSDORFF, BERGEN CO., N. J.

The article in the April *Amer. Agriculturist*, on the Lancashire mats, or screens, induced me to try to make the ordinary mats by this method. As the mats needed for covering hot-beds, cold-frames, etc., are required to be of a different size from the Lancashire screens, as well as of less thickness and weight, a different frame was necessary. To make



FRAME FOR MAKING STRAW MATS.

this I procured ten strips each 7½ feet long, 2 inches wide, 1 inch thick, and four pieces of the same material 4½ feet long, for cross pieces. Each end of the long strips was "halved," for half its thickness. Two of the cross-pieces being laid down, five of the long strips were placed, one in the middle, one for each side, and the other two equidistant from the center and side strips, as in the diagram, and firmly nailed, this made one-half of the frame; the other half was made in the same way, and the two hinged together at one end as in the drawing. The space between the long slats when the two parts are shut together, is one inch. To keep the frame from springing apart, after being filled with straw, a hook and screw-ring was fastened on each side at the center, and two on the end. The frame was now finished, and after laying it upon a pair of horses, it was filled with straw laid crosswise and evenly, with the but-ends projecting beyond the frame an inch on each side. The halves, being fastened by means of the hooks, it is set on end and kept in an upright position by any convenient support, and is ready to be sewed. The needles used are about five inches long, and half an inch thick, and can be made of any light wood, as the mats, being only an inch thick, do not require such strong needles as those described in April. The sewing is done in four places, the stitch being the same as described for the Lancashire mats, with the addition of tying each stitch, making a simple tie each time the thread is put through. This tied stitch is very secure, and prevents any slipping of the twine. This differs from the other mats, you will observe, in having the straw laid crosswise and the sewing done lengthwise, as shown in the illustration by the dotted lines. After the sewing is finished, the projecting ends of the straw are cut off even with the frame; which may be readily done with a strong, sharp knife. For hot-beds the mats are made 7 feet long, in order that there may be 6 inches to hang over at each end; the frames are made 6 inches longer, as so much is lost in the length by the taking up in sewing. Their width, 4½ feet, allows two mats to cover three 3-feet sashes. These mats are light, flexible, and strong, and can be made about twice as quickly as by the old style of weaving them. Two men with a little practice can readily make ten mats in a day, while, according to Mr. Peter Henderson, two men, by the old plan, can only turn out five mats a day.

[The foregoing comes from a friend whose gardening operations we have frequent occasion to observe; we have examined his mats, and are sure that for excellence and apparent durability, they are superior to any we ever made in the old way ourselves, or have seen made by others. To any market gardener who uses many mats, (and some have hundreds of them,) this one hint as to the saving of time is worth in money value the cost of the *Agriculturist* for the rest of his life.—ED.]

What is a Soup-Bunch?

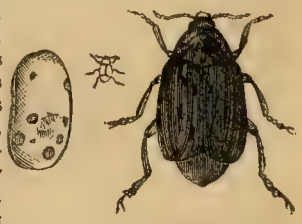
A gardener who sends his "truck" to Chicago, writes that he sees "soup-bunches" quoted at a good price in the market reports, and writes to know what they are, and what he shall grow to make them. A soup-bunch is variable as to quantity and quality. It is essentially celery tops, parsley, leeks and thyme; sometimes other herbs are added, but so far as we have noticed those sent to the New York market, there are rarely any other than these in the bunch. The relative portion of the contents varies with the season. In fall when celery is being taken up, the refuse heads, too small to store away for winter, are put in, later the outer leaves that are trimmed off in bunching are used. In summer the leaves of celery that has been grown for the purpose, are put in. To grow celery expressly for this, some tall kind is sown, and it is grown without earthing up, the object being the green leaves only. As to quantity, we can give no rule. The size of the bunch depends upon the season, but at best it can only be described as a handful. The customs in the Chicago market may be different from those of New York, and it will be well for our gardening correspondent to make special inquiry as to this, as such are the prejudices of people in these matters, that an article too much in his soup-bunches would be quite as likely to spoil their sale as one too few. In visiting a strange place, we always make it a point to examine the market, and learn upon what the people live. Cities so near together, and between which there is such constant intercourse as Boston, New York, and Philadelphia, offer marked contrasts in their market customs, while the differences between those of these cities and New Orleans on the one hand, and Montreal on the other, are curious and interesting. A few years ago we saw in the Charleston, S. C., market, soup-bunches that far eclipsed anything we had before seen. The truck stalls were kept by middle-aged negro women, who, as to age, size, weight, and volubility in importuning persons to purchase, might have been the same that we saw there 25 years ago. These old negroes put up their soup materials with an eye to the tasteful that would quite put to shame the slovenly huddles of the New York markets, and deserved to be called "soup bouquets" rather than "soup-bunches." We make a sketch of one of these from memory, which is given on page 184. The basis, or frame-work was a cluster of celery-leaves, conspicuous at each side of this were crescents cut from some kind of a squash or pumpkin; onions, small turnips, and carrots, were then tastefully worked in, while sprigs of slender sweet-herbs, imparted to the whole a finish that one would think hardly possible with materials so devoid of beauty as pot-herbs. It will be seen from this that in so insignificant a matter as a soup-bunch, the markets of different cities demand not only different materials but different styles of preparing them, and whoever is to supply any market with any produce must first learn its ways. In the New York market the bunches are sold from the wagons, and are not handled by the commission men.

Bean and Pea Weevils.

The common pea-weevil (*Bruchus pisi*) is unfortunately too well known all over the country, though with regard to this, as well as many other common insects, there is a great want of popular knowledge as to its habits, many thinking that it is only found in those peas which have not been properly kept after harvesting them. The eggs are laid by the mother beetle, upon the very young pods as soon as they begin to form, the work being probably done in the night; they are very minute, and of a deep yellow color. The newly hatched grub or larva, yellow with a black head, makes its way through the pod, and into the nearest young pea, one grub only to each; the hole it makes in the pod soon grows over, but on the surface of the pea a minute discolored spot may be observed. Once within the pea, the grub "grows with its growth," usually avoiding the plumule or growing point of the seed; by the time the pea has become ripe, the grub has completed its growth, and is ready to go into the chrysalis or pupa state, but before doing this it has the instinct to provide for its future exit, by making a circular hole to the surface of the pea, but without cutting through the seed-coat or hull of the seed; the presence of the weevil or "bug" in peas, is known by this semi-transparent spot upon the surface, the hole being covered only by the thin parchment-like covering or skin. In some cases the perfect insect or beetle comes out the same fall, but it generally remains dormant until spring. If peas containing these insects are sown, the trouble will be continued, as the weevils will make their way out, and be ready to deposit their eggs at the proper time. When the seed peas have holes in them, the perfect insect has left, or is dead; as such peas will germinate, it is popularly supposed that they are just as good for seed as sound peas; that this is not the case, Mr. Peter Henderson has proved by experiment; the grub of the weevil having devoured a large share of the nutriment intended for the early growth of the young pea, the plants are feeble when they come up, and lacking sufficient food at the start, are never so vigorous and productive as those from the sound seed. Within the past twelve years or so,

A BEAN WEEVIL

has appeared in beans of various kinds, over a wide extent of country; it was first noticed in the New England States, but now extends as far west as Missouri, and we every year receive specimens from widely separated localities. Some supposed it to be the same as the pea weevil, others thought it to be the granary weevil, and entomologists were puzzled over it, and referred it to one or another species of *Bruchus*. At last Prof. C. V. Riley, in one of his admirable reports upon the Insects of Missouri, (1871), described it as distinct from any other species, and called it *Bruchus fabæ*, the American Bean Weevil. For a detailed entomological description of the insect, reference may be made to the above mentioned report. All that farmers and gardeners require to know, is the fact that while really distinct from the pea weevil, its habits are very similar; the eggs are laid upon the young bean-pod, in the same manner as the others are upon the young pea-pod, and it goes through similar transformations. There is one important difference in their habits, while in the pea but one grub grows and develops in each seed, in the bean there are several, as many as 12 or 14 being sometimes found in a single bean, and the whole interior contains nothing but the grubs and their excrement; no matter how many there may be in a bean, each, before it goes into the pupa state, makes a smooth, nicely lined cell. The accompanying engraving from Riley's Third Report, gives a bean with its many spots, a beetle of the natural size, and one much magnified, to show its markings. This weevil



A BEAN AND ITS WEEVIL.

is only about half the size of the more common pea "bug," its general color being a tawny gray.

Of course with both the pea and bean weevil, the only safety is in sowing none but sound seeds, but unless a whole neighborhood will agree to this, however careful one may be, he will be supplied from a less cautious neighbor; scalding will kill the insect without injuring the germination of the seeds, and it is said by White (Gardening for the South) that if seed peas, or beans, when they are gathered, be stored in bottles or jars with a teaspoonful of spirits of turpentine, and kept tightly closed, the vapor of the turpentine will kill the insects without injury to the vitality of the germ.

Little Garden Helps.

Mr. J. H. Spear, Norfolk County, Mass., sends sketches of two appliances that he finds very handy in the garden. One is a simple seed sower, made from an empty fruit or mustard can, shown so plainly in fig. 1, as to need but little explanation. A hole is punched in the bottom of the can, of a size to allow the seed to drop properly, and a handle is fitted to the edge, made of a green stick of convenient length; this is split for about two inches, the edge of the can slid into the split, and two or three large tacks driven through to keep the handle steady, finishes the job. As these are readily made from cans that one is glad to get rid of, several, with holes of different sizes to suit different seeds, may be kept on hand. Mr. S. finds it better to make the hole in the bottom of the can rather small at first, and enlarge it by reaming until just the proper size is hit. In use the drills are first made ready, he then puts a small quantity of seed into the can, and walking at a moderate pace, is able to shake the seed out very evenly. His other device is one for dusting currant bushes with white hellebore, or for distributing any other dry powder that it is desired to apply to other plants. It is a cylinder of perforated tin, 2½ inches in diameter, and 10 inches long; this has a fixed bottom, with a socket (*a*) to receive the end of a handle of convenient length, and a brace to strengthen the socket; the cover, *b*, fits sufficiently close to keep its place while in use. One living at a distance from a tinsmith, could readily contrive a duster from a fruit can; a wooden cover would answer as well as a tin one.

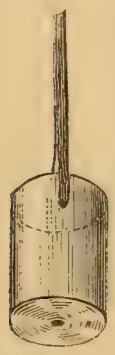


Fig. 1.

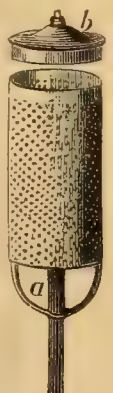


Fig. 2.

Budding the Hickory.

"W. F. R.," Mayport, Florida, writes: "In a former number of the *Agriculturist*, I find an article on grafting the hickory, stating that "as far as people in general are concerned, it may be regarded as impracticable."—My experience is as follows: About a year ago I budded a pecan into a vigorous hickory sprout of the same season's growth. The bud remained dormant until the following spring, when the sprout was cut back to the bud. A shoot grew from the bud last summer, which measured nearly ten feet. This shoot has also thrown out seven laterals, measuring from two to four feet each. Last winter I cut down a number of my hickories, some of them measuring nearly a foot through, and this summer have budded the sprouts from them with the pecan. I use *annular* budding, *i. e.*, a ring of bark with a bud upon it, put in place of a similar ring removed from the stock. It is very seldom a bud fails to take, and the few failures I find are occasioned by a small grub, which works between the bud and the stock, which can be prevented by the application of grafting wax.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

All of the time I see a plenty that might be said about various household works and ways, but some topics wait from month to month until more study or observation can be given to them. Then sometimes I find myself, as to-night, too much engrossed with my own cares—planning work for the seamstress who comes to-morrow, wondering if this howling March storm will give way before morning and allow us to undertake the washing already deferred two days, trying to see how it is possible to get ready to remove to other quarters next week, listening to hear whether baby coughs again, and what kind of a cough it is;—too much preyed upon by such cares as these to get fairly started upon any topic of general interest. In order to get myself started, I quote from a recent letter from

A Woman of the "Improving Kind,"

who writes: "You will think I have improved some when I tell you that we have slept with the windows open all winter, and the children have never suffered so little from colds as this winter. We have no stove in the south-east bed-room, and like it better so. As soon as we are out of our beds in the morning, I open them, and open the outside door in my room and the windows, for an hour or so. It is so cold in my room at night that a cup of water will freeze solid, but we all get along with it nicely. None of us have frozen noses yet, which is almost a wonder.

"My husband used to think he could not sleep with a window open in moderate weather without catching cold, but there is no trouble now. I am trying to cook more wholesome food too. I do not make cake at all, and pie only once a week. I hope to learn to make many things both palatable and wholesome. My boarder, instead of being a hindrance to me, is a help in every good word and work. The children have been well all winter, and have improved in disposition since our change of diet."

No Cake.

The "change of diet" referred to in this letter would not be considered very radical by many. All sorts of good food, including meats and fine flour breads, are used, but plainly cooked and eaten with regularity, or only at meal times. The abolition of the "pan of cookies" alone is a great improvement upon the old way of doing. Even plain molasses cookies, used for lunches between meals, work much mischief to the health of the family. All you housekeepers who dare to live without doughnuts, or cookies, or jumbles "on hand," please hold up your hands, and I wish I could count how many there are. Some housekeepers dare not be found without some sort of cake in the house, for fear of unexpected company; some fear their boarders, if so unfortunate as to have them; some their hired help, and some their husbands. These same husbands sometimes inveigh against cake as dyspepsia-breeding, but the wives observe that these lecturers eat no less cake on that account, and they go on trying to please their husbands by cooking those things which the men evidently relish.

I do not feel at all sure that plain cake ought to be entirely abolished from our tables. On this point I would like considerable testimony. I have never made much cake for my family, since it included children, because I found by experience that cake did not agree with them. One of its worst as well as surest results is the destruction of their appetite for simple nutritious fare. The nerves of taste crave something more tickling. I have noticed though, that the more one goes without cake or other food of this kind, the more plainly one can perceive its ill effect when eaten. I used to think this an argument in favor of the free use of cake, and many—perhaps most people—would think so, but I am reminded of a former neighbor of ours, a German, who used to give his four-year-old son a little whiskey every morning in order to accustom him to it, so that he would not be easily upset by its use when older. I have noticed, too, that the more we accustom ourselves to pure air, the more easily we are unfavorably affected by bad air, and the more perceptibly injured by close rooms or a foul atmosphere of any kind. I also see that the more we are accustomed to genuine culture and refinement, the more unpleasantly all narrow-mindedness and coarseness makes itself felt. Also in morals, the pure and honest are pained and sickened by deeds which seem well enough to those habituated to them. In all these things there *may* be some analogy. Anyhow, I have never discovered that our health suffered from lack of cake. Writers say that the nourishment it contains,(for surely flour, eggs, milk, butter, and sugar, are all nourishing, each in its own way and degree), is in too concentrated a form to serve as nutritious food, and that its tendency is to clog the digestive organs.

The Schoolmaster's Trunk.

I never could have written this charming book, but if I could have done it, how I would have liked the task! The simple, natural style is very charming to me, but the sentiments themselves—to them I cry heartily "amen and amen!"

You see, it is a kind of household reform book, in the guise of an odd sort of story—not story either, but just what it purports to be in its full title: "Papers Found in the Schoolmaster's Trunk." What the schoolmaster wrote his papers for, I do not know, unless just to free his mind—one of the best of reasons perhaps. He seems, like most of Mrs. Diaz's fictitious characters, very natural or real, and I find myself wishing to compare notes with Mr. McKimber, on several points pertaining to domestic science. I quite agree with him that no science is more important.

What the regular "woman's-righters" are thinking about, I can not see, for no mention of Mrs. Diaz and her sturdy blows at woman's wrongs, have I ever seen among their writings, except a few lines by "T. W. H." She seems to me one of the best workers we have, for the genuine emancipation of woman, with much broader views of the whole subject, and much deeper insight of its full meaning, than most speakers and writers upon the subject. Oh dear! How I do want to quote from this book!—for though I believe the same things, I could never "put" them in the same way. Though I "shake in my shoes" for fear of the Editor, when I undertake quotations, I will venture just a little:

"And the idea occurred to me that woman might not have been created mainly for the purpose of getting three meals a day. If she were, thought I, what a waste! for certainly a mere meal-getter might have been fashioned out of cheaper material."

"Since my eyes have been opened, however, these delicacies taste too strong of the toil to be relishable; for I see that the rows of pies on the buttery shelves, the mounds of cake, the stacks of doughnuts, do not come there by any magical 'slight o' hand,' but are wrought out of the very life of poor Mrs. Fennel—literally of her very life."

"Indeed this prying into domestic affairs has made me surprised twice. First, at the amount of physical labor a woman has to perform; second, that she can carry so many things on her mind at one time, or rather that her mind can act in so many directions at one time, and so quickly."

Mr. McKimber became deeply interested in his "science," and studied different persons as his "specimens." One day he spent an hour in watching Mrs. Fennel, at her work as cook, seamstress, tailor, instructor of a learner in house-work, physician for a sick neighbor, judge when the children come with a dispute, preacher on brotherly love to the quarrelling little ones, teacher, trader with a tin peddler—all in an hour before dinner, which comes daily as the grand climax, which must be kept in mind through all the other operations. Then he watched Mr. Fennel for an hour, while the latter pursued his daily employment as a carpenter. Mr. Fennel spent his time quietly planeing and grooving boards. "His movements were distinguished by an entire calmness." "As far as hindrances were concerned, he might have shoved that plane until doomsday, and with a temper smooth and even as his own boards."

"I suppose every scientist has a theory connected with his science. My theory connected with my science is this: that a mother's chief duty is the taking care of her children."—"If 'the three meals take about all day,' and making and mending the evening, where is the children's time coming from?"

"The palate craves enjoyment, and that craving, being a natural one, must be recognized as such. But what I insist upon is this; namely, that gratifying the palate shall not rank among the chief occupations or the chief enjoyments of life, for it has usurped those positions long enough."

"The profusion of viands now heaped upon the table, betrays poverty of the worst sort. Having nothing better to offer, (to company), we offer victuals." "The dishes that make the work and cost the money, are usually eaten after hunger is satisfied, and do harm rather than good."—"Simplify cooking, thus reducing the cost of living, and how many longing individuals, now forbidden, would thereby be enabled to afford themselves the pleasures of culture, of travel, of social intercourse, of tasteful dwellings! And it might be added, at the risk of raising a smile, how many pairs of waiting lovers, now forbidden, would thereby be enabled to marry, and go to—paradise, which is to say housekeeping!"

Patterns for the New Under-Garments.

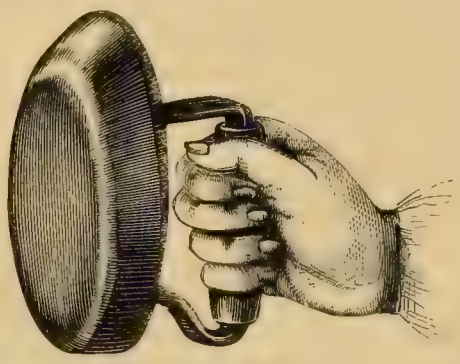
I have been notified that the Dress Reform Committee of Boston, have removed from their former rooms, to No. 4 Hamilton Place, where patterns and garments can be obtained. Any lady can obtain ready made garments fitted to her size, by sending her measure, taken according to directions given in the Committee's circular. The under suits are made either with waist and drawers in one piece, or buttoned together at the waist. I think, from some experience, that most ladies would prefer the latter.

A Cover for the Bread Pan.

The old table-cloth will dip down into the light sponge, you know, unless carefully guarded each time, and the tin pan when covered over the fermenting dough, gets jarred off frequently. But if you suffer such annoyances as these, you can get relief as I have done, by making yourself a regular cover for the bread-pan. I took four or five sheets of coarse brown wrapping paper, ironed them smooth, and cut them round, the size of the top of my bread-pan. Then I basted them together, and covered them on both sides with clean, old calico. Two strips of the same calico, cut twice the depth of the pan, and doubled up so that the strip was then of four thicknesses, were sewed around the edge of the stiff circular top of the cover. I left this plain ungathered frill open on one side, so that I could turn it back when setting it close to the stove-pipe. But last week my bread sponge got the start of me, and was sticking fast to the inside of my new bread-pan cover, before I suspected it of being so light. Of course it was a difficult matter to clean it off properly, and the idea was suggested that an old napkin or any clean cloth, pinned inside the cover, and easily removed when soiled, would save trouble in case of another such accident.

Shirt Bosoms and Collars.

Mrs. M. Erickson says that shirt bosoms and collars, when new, have a smoothness and gloss, which she can not impart to them afterwards. She has tried spermaceti, gum, and other things, in the starch, and yet fails to get the gloss "as good as new." Spermaceti and other forms of grease may help, but she has not yet tried the right kind of grease, which is—elbow-grease, and it is not put into the starch either, but applied directly to the linen. A long while ago we wished to know how this polish was placed on the "boughten" shirts, and, having an acquaintance with an owner of a laundry, we asked if he had any objections to tell us the secret of his addition to the starch.—"No," said he, "it's done entirely by elbow-grease."—This led to an explanation, in which we were informed that they added spermaceti, or whatever the women at the laundry had a fancy for, but that he doubted if these did much towards it; the whole secret laid in the kind of iron and in the woman who uses it. The iron must be one with a brightly polished face, and the woman must be one with sufficient strength of arm to make it do its work. An iron of the described kind was procured, the ironer told what was expected, and ever since the shirts have been as good as new. These irons are sold at the furnishing and probably hardware stores; they differ from ordinary flat-irons, or sad-irons, in having no sharp corners, the edges being rounded all around, front, sides, and rear, and moreover, the surface is polished smooth and bright. The linen is first ironed in the ordinary way, and allowed to become quite dry; the surface is then slightly dampened by passing a wet cloth over it, and



IRON FOR POLISHING LINEN.

then rubbed, and rubbed hard, with this polishing iron, until the surface of the linen itself becomes polished. Of course one requires a little practice to get the knack of it, but after a while any strong ironer can make very handsome work. Aside from the finer appearance of linen thus treated, there is the great advantage that it keeps clean much longer; the surface being made thus close and smooth, dust does not adhere to it, but instead of settling into the meshes of the linen, falls off from the surface. The engraving shows the form of the iron, which is perhaps a little smaller than those of the ordinary kind.

Stoves—Taking Down and Blacking.

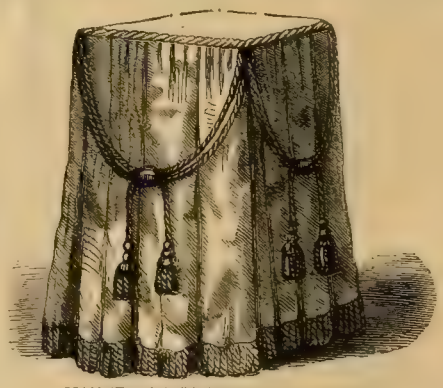
One amusing thing about our correspondence in the household, as well as other departments of the paper, is the fact that several questions will come to us from widely separated points, all bearing on the same subject; now we have within a few days of one another, inquiries from a housekeeper in Spain and another in New Jersey, as to the best blacking for stoves, and how to apply it. As this is a season when many stoves are unfortunately taken down and put away for the summer, their proper treatment becomes a matter of general interest. "Unfortunately," we say, stoves are taken down the present month, but we might have used a stronger word, and had we said recklessly, it would not have expressed our meaning quite so well as culpably. There are those housekeepers to whom the necessity for house-cleaning on a certain day in May has all the force of a commandment—and what house-cleaning under these conditions means, many a reader too well knows, and many a grave-stone stands as a silent witness. We will not enumerate the ills it brings—but among the good it sends away are the stoves—often from every room except the kitchen. A clear cold January day with the mercury at 15 to 20 degrees below zero, is absolute comfort in comparison with a damp day in May, with the thermometer between 32° and 40°. But this is not what we started upon, let us dispose of this almost vital point by saying that in none of the northern states should the stoves be removed from the living rooms, if the health, let alone the comfort, of the family is regarded, before the middle of June. We have pleasant days, and warm, in May, but we cannot remember a year since we have given attention to the matter in which there has not been a cold spell in the first half of June in which a fire was absolutely necessary to the comfort of the well, and the well-being of the ill. "Then why take stoves down at all?" will be asked by some inveterate May house-cleaner. Exactly so—why? Not only can we not see the slightest use in taking down the stoves, if that be the way of heating, but we hold that in country houses there should never be a day in the whole year in which a fire cannot be built at a moment's notice. In summer an open fireplace is preferable to a stove, but if there is no fireplace, leave the stove, for there will be but few weeks in the whole summer in which a little fire in the morning or evening will not be needed to ventilate the room or to dry it, if not to remove the chill. In malarious districts this is of special importance; a few sticks will prevent what much quinine may not cure, and be vastly cheaper. So we insist that in the family or living room of every country house there should always be a fire laid in fireplace, grate, or stove, ready to diffuse comfort when needed, even if it be in July or August. But in houses heated by stoves there are several which may come down without detriment, and those which remain in place should be properly cared for, which brings us at last to

Taking Down the Stoves.

If the stove connects by a short, straight piece of pipe directly with the chimney, there will be little trouble in replacing it next fall; if instead of this there are, as is more commonly the case, several lengths of pipe and more or less elbows, then too much precaution cannot be taken. Some hold the theory that a stove-pipe once taken down can never be put up as it was before without calling in a fitter. Stove-pipes make great havoc with domestic patience, but a proper foresight at the taking down will help greatly to a felicitous putting up. Wherever two ends of pipe, whether sections or elbows, come together, they should be marked, whether intentionally separated in taking down or not. If a large pipe is taken down in the fewest possible pieces, some others will separate, and all be in confusion, hence the only safety is to

Number Each Joint,

that is, whenever two lengths or sections, including elbows, come together, with two numbers, as 1–1, 2–2, etc. Do this before disturbing the pipe; chalk will answer, but the marks must be renewed if blurred by handling, before the pipe is put away for the season. Where anthracite coal is burned, a simple thumping of the pipe will remove the gathered ashes and dust; a pipe to a bituminous coal-stove will show more deposit, and will need a more thorough cleaning, but in those of wood-stoves, the deposit is often very heavy, and, if the pipe is a long



MANNER OF CONCEALING A STOVE.

one, of a highly acid and corrosive nature. If this be not removed when the pipe is taken down now, the work of destruction will go on all summer, and when it is to be put up in the fall, it will often be found completely honey-combed and useless. Hence a pipe of this kind should have every incrustation upon its interior removed by thorough thumping and a brush of twigs. To arrest the corrosion of what deposit remains, the interior may be coated with ordinary lime-wash or whitewash. Both stove and pipe should be thoroughly blackened before they are put away for the summer.

The Object of Blacking

a stove is not solely to improve its looks, but it is to cover the surface of the iron with a coating that will prevent rusting. Sometimes a kind of black varnish is used, which makes the stove look very

well, but when a fire is built it burns off with a most unpleasant odor. We know of nothing so good as plumbago or black lead, and all the stove blackings put up in packets under various fancy names, are some form of this, more or less pure. Black lead is of such a "greasy" nature that properly rubbed upon the iron it will adhere and form a continuous film all over it so as to thoroughly protect the surface from the action of the air, and consequent rust, but it will not resist water, and the stoves should be stored where the rain cannot reach them. The old method of mixing the blacking with water and applying it wet, and then rubbing with a brush with some dry blacking, is founded upon correct principles, and if well done will give a complete covering. All movable parts, such as legs, small doors, and the like, should be placed inside of the stove before putting it away, or there will be much hunting for them next fall.

Concealing a Stove.

If there is no convenient place to store the stove, or for other reasons it is necessary that it should remain in the room where it has been used, it may be, in most cases, easily concealed, and even converted into a sightly and convenient piece of furniture. All that is needed is a board of suitable size to set upon the top of the stove; this has a strip at each corner for a leg; the legs may be braced if need be, and the whole covered and draped according to fancy, with chintz, or other convenient material. The engraving gives the idea, the manner of carrying it out will vary with circumstances.

Another Trap for Rats.

Though there have been in the *American Agriculturist*, from time to time, numerous descriptions of plans for trapping rats and mice, yet the number of methods is not nearly exhausted. "A Subscriber" sends us his method, which he thinks "the best out," and which is explained by the accompanying illustration. He takes a flour barrel or a keg, and ties over the top a sheet of very stout stiff paper, or an untanned sheepskin stripped of the wool. Upon this cover he places corn or meal, and feeds the vermin in this way in some secluded place, until they become fearless of danger, and quite at home upon the cover. He then smears the cover around the center with glue, and sprinkles corn, wheat, or meal upon it, which, when the glue is dry, adhers firmly to the paper or the skin. He then cuts two slits crossing each other, as shown in the engraving, several inches long, by which the central portion of the cover is made very treacherous footing. When the rats run across this center they slip through into the barrel, from which there is no means of escape. The openings instantaneously close up themselves, and other rats follow.

TRAP FOR RATS.

Don't Touch the Children.

BY MRS. E. S. LINCOLN.

Of the many trials that farmer's wives have to endure, not one is more difficult to avoid, and yet none more cruel, than that of having to let one's carefully reared little ones associate with strange hired help. My experience in this line has been such that while I extend a friendly welcome to the stranger, I am mentally crying out to him or her, as the case may be: "DON'T TOUCH MY CHILDREN!" Break the dishes, waste the stores, spoil the meals, let the horses take cold, the colts starve, the cows dry up, the rats run riot in uncovered feed-bins—anything, so long as you leave my little one's untarnished. Everything else can be endured if you don't touch with unclean hand the souls of my children. It seems to me that it is a crime well nigh unpardonable to sully the innocence of confiding little boys and prattling girls, yet there is so much of it done, and their poor mothers are all unaware of the presence of the serpent in their flower garden until it has become impossible to ever again erase his slimy trail.

Not many years since, needing some one to cut firewood for the approaching summer, my husband engaged a lad of seventeen, to whom he awarded the highest praise as a diligent and efficient worker, especially at chopping and splitting wood. From the first, the boy, whose name was Marion, seemed to feel sure of a friend in me. There is in nearly every large family of children one who seems less favored and beloved than the others.—"The black sheep of the flock"—such was poor Marion in his own cheerless home. For days and nights in succession during the summer, when a little boy, he had lived in the woods near their house, coming home for food only when pressed by hunger. His one ambition, he confided to me, was to obtain a good education. Nothing could have appealed more effectually to my heart for the friendless lad than this. Had *I* not known what it was to be compelled to live in ignorance while thirsting for knowledge and culture? To know myself wholly devoid of grace and beauty, to be bashful and awkward, and wholly unable to please while I so longed for mother-love and home petting? Ah, but I had. So I gave Marion my sympathy and pointed out to him the speediest way of reaching his goal.

My boys, aged twelve, six, and four years, liked to go with him to the wood lot where he chopped, to the field and garden when he hoed, and he seemed to be as fond of their company as they were of him. One day while Mr. L. was away, he was employed near the barn, and the children were with him as usual. As I stepped to the porch to call the boys to dinner, I could hear Marion singing loudly. They being out of sight, and not likely to hear my call, I followed the sound of his voice to the farther side of the barn. But, getting near enough to distinguish the words, I found his song to be a most obscene piece of ribaldry, interspersed with foul-mouthed comments of his own, to the hearing of which the wealth of worlds could not have tempted me for one moment to expose my innocent little ones. My first agonized thought was, as I but too well remember, of the weeks that this had been going on, unknown to me. Of course, the boy was instantly discharged, but the contamination that he had brought into my flock was not to be so summarily expelled. I could only mourn in anguish of heart over my children, so cruelly robbed of the priceless gem of soul-purity. I am sure the boy did not intend to cause me such bitter sorrow in return for kindness received. I am afraid that his very earliest existence began in moral leprosy, and that he had not the faintest idea of his own degradation. Poor boy! Never to have known the beautiful innocence of infancy; to put on proper behavior only as one does their best suit, to appear in company! How can such persons become reformed, I sometimes wonder; what, to one who has *never* known purity, is the process of repentance and turning from sin unto righteousness? What sense can the words "ye must be born again" convey to their minds? God only knows. God pity them!

But, oh mothers, be careful not to let them sully your children. You can never press your boy to your heart again with the same proud fondness, never gaze into the dear, deep, untroubled eyes again after the agent of evil has done his work. Be ever on your guard against this source of contamination, or you may mourn in vain when the evil is done.

BOYS & GIRLS' COLUMNS.

Aunt Sue's Chats.

FANCY BOXES.—Ada. A very pretty little box, to hold bon-bons and other small articles, may be made by any "little girl," who has as much "gumption" as you seem to have. Do you see the picture of a hat? (fig. 2). It looks very much like a hat, doesn't it? Well, it is made out of a flat paper-box, such as is used for pills and other little notions, and a round piece of card. Go to a druggist and get a round card-board pill or other box, about 2½ inches in diameter, like fig. 1. Then cut a piece of card into a circle of about 4 inches diameter, and with strong white thread sew the bottom of the pill-box to the larger card, right in its center. Never mind if the stitches show, the candy will hide them on the inside, and the Japan varnish on the outside. It must be sewed very firmly, so that lifting the cover off the box shall not break the stitches. Now I must tell you how to make the varnish. It is composed of shellac, lamp-black, and alcohol, subjected to a gentle heat. But you can make it in a much more simple way from black sealing-wax; break the wax into very small pieces, and put them into a wide-mouthed, well stoppered vial. Cover the sealing-wax with alcohol, put the vial in a warm place, shake it occasionally, and in two or three days the varnish will be ready for use. Now paint or varnish your hat with it. It will not take long to dry, but don't apply it to the upper and the under parts both at one time; let one part dry thoroughly before you paint the other. Now take about a quarter of a yard of narrow black ribbon, and tie it around the hat, and if you can paint the name of some vessel on it, it will look more finished. The sealing-wax varnish is a very handy thing to have in the house, as it is often useful in freshening up a shabby work-basket, for instance, or other little article. If you prefer red varnish, use red sealing-wax. Remember that this, like all other varnishes, takes fire readily, and when at work, keep it at a safe distance from the lamp and fire. Keep well corked, and when too thick, thin carefully with alcohol. You will have to give the hat three or four coats of varnish perhaps, so don't be discouraged if after the first coat it should look like a "singed cat."

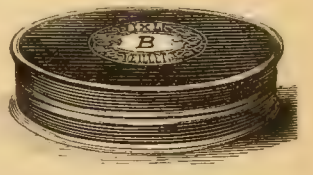


Fig. 1.—BOX FOR THE HAT.

Fig. 2.—HAT COMPLETE.

MINERVA G. H. asks me if I can tell her "how to make something for the little ones, as fascinating as paper

No. 444.—Picture Puzzle.—"The Old Man of the Mountain" is there, if you can only find him. Come, you of sharp eyes and quick wits, and point out the venerable gentleman. The mountain is a dreary one, and no wonder he looks lonely.

windmills?"—Yes, Minerva, I think I can: paper-boxes are just as "fascinating" and just as useful. I have seen young ones kept quiet with them for an entire morning. For the benefit of those who don't know how they are made, I will describe their construction. Take a square of writing-paper, say about the width of ordinary note-paper, or of any size you please (fig. 1). Fold the diagonal corners together, as in fig. 2, and crease it across; now fold it across, with the other corners together, so that the creases shall just cross the square like an X. Now open it, and bring the two corners to the center of the X, and crease the folds, as in fig. 3. Fold

Fig. 1.

Fig. 2.

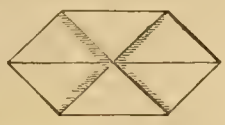


Fig. 3.

it between each two creases, as in fig. 4. Now turn the square, and crease it seven times across, the other way, until the paper is folded in squares, like fig. 5; then take

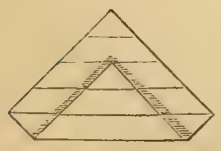


Fig. 4.

Fig. 5.

Fig. 6.

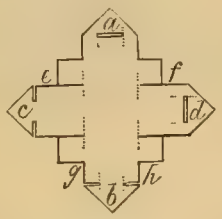


Fig. 7.

your scissors and cut out the little triangular sections blackened in fig. 6, and your paper will be shaped like fig. 7. Now put the point of your scissors carefully through the little black lines at *a* and *d*, and make slits (like button-holes); then cut the black lines at *b* and *e*, as far as the dots, *and no further*. Cut the black lines at *e*, *f*, *g*, and *h*. Now fold the point at *b*, so that it will go through the slit at *a*, and when you have passed it through, straighten it carefully out, as in fig. 8. Now pass the point *c* through the slit *d*, and your box will be complete, and when your "little sister" has made one *all her own self*, her joy will be complete too. Of course you can make a "nest" of boxes by gradually increasing the size from the smallest.

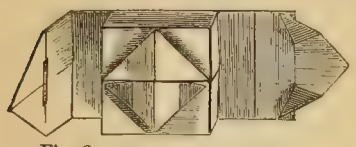


Fig. 8.—BOX HALF TOGETHER.

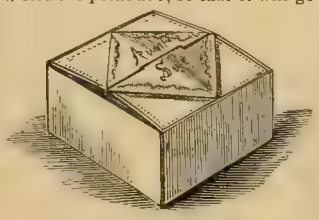


Fig. 9.—BOX COMPLETE.

"A FARMER."—The magic square trick is pretty well understood by our puzzlers, and it is no more difficult to arrange 9801 squares, than it is to arrange nine squares. But if you would transpose the columns, after you have written them mechanically, the plan of construction would not be so obvious. I append a sample by way of example.

35	47	22	41	4	10	16
11	23	5	17	29	42	48
36	6	30	49	12	18	24
19	31	13	25	37	43	7
44	14	38	1	20	26	32
27	39	21	33	45	2	8
3	15	46	9	28	34	40

These columns add up to 175, perpendicularly, horizontally, and diagonally.

A. R.—No. We are always glad to find that our puzzles have afforded amusement and instruction, but offer no "premium for the most answers."

WILLIE S.—Alphabetical arithmetic is solved by the same process as cryptography, or cipher-writing. You must find the key by patience, perseverance and ingenuity. If in the commencement of a sum you subtract H, from H, and the remainder is Y; you may be very sure that Y represents the cipher nought, and that "nought" may prove the key to the whole sum.

MARY S.—You will find a "concealed river" in the following sentence:—Give me some of that ham, Esther. The river is "Thames," and to form it, you take t from "that,"—"ham," and es from "Esther." Now do you see it?

Value of Metals.

The following table gives the approximate commercial gold value of a *pound* (avoirdupois) of the metals named. It will be seen that eight of them are more costly than gold. Iridium is much used for the points of gold pens, on account of its hardness. Platinum is now much used because of its infusibility, while, like gold, it is not attacked by any single acid, and does not rust. It was, until recently, more costly than gold; and it is the heaviest of all metals. Aluminum is the metalic base of clay; it resembles silver, but is many times lighter, and tarnishes as little as gold or platinum. On this account, and on account of its lightness, it will come into large use when improved processes render it easily obtainable. But a few years ago it was worth perhaps a hundred dollars an ounce, merely as a curiosity, but new methods of extracting it have greatly cheapened it. As clay is abundant, the supply of aluminum is unlimited, though at present it is not obtained from clay, but from a mineral very abundant in Greenland, and from which it is more readily extracted. Though the cheapest, iron is intrinsically the most valuable of all metals. A colony on an island, shut out from all intercourse with others, would make more *useful* things—implements, knives, needles, etc., out of 100 lbs. of iron, than out of 100 lbs. of gold or other metals. Steel is simply iron, with a little carbon (coal or diamond) in it:

Iron (1 lb)	$0.02	Aluminum	$40.00
Lead	.07	Magnesium	46.50
Zinc	.11	Chromium	58.00
Arsenic	.15	Thallium	108.77
Copper	.25	Platinum	115.20
Tin	.33	**Gold**	301.45
Antimony	.36	Iridium	317.44
Mercury	1.35	Osmium	325.28
Nickel	2.50	Uranium	576.58
Sodium	3.20	Palladium	653.00
Bismuth	3.63	Rhodium	700.00
Cadmium	6.00	Ruthenium	1400.00
Cobalt	7.75	Vanadium	2520.00
Silver	18.85	Indium	2520.00
Potassium	23.00.		

The Doctor's Talks.

At last my young friends seem disposed to take me at my word. I have often hinted, indeed directly stated, that I am always pleased to hear from them, and the more intelligent questions they ask, the better I shall like it. By their questions I can know what they are interested in, and what they are talking and reading and thinking about. Of late I have had quite a number of letters, and my "Talk" must this time be devoted to things suggested by them; these letters are apparently by some of the older boys, but the younger boys, as well as the girls, will not be forgotten. I can not answer at once all the letters I have at hand, and others must wait a while. There is one kind of questions I hope you will not ask, those about medical matters; there are very few of these that boys and girls need to know anything about; I have had nothing to do with medicine for years, and hope to keep out of it all my life. Now one of our youngsters wishes to know

ABOUT HYDROPHOBIA, Master "W. P.," Clermont Co., O., who asks quite a numbe of questions about it, which no person in the world can answer properly. Even those physicians who have given the most attention to the matter, are obliged to admit that there are many things about it which they do not know. The disease is of very rare occurrence, and as, so far as known, it is incurable, persons are naturally in great fear of it. We can answer one of our young friend's questions: it is not caused by hot weather, as it is found to occur quite as frequently in cold months as in the others. The best way is to avoid all sick dogs, and not to give the matter any anxious thought, as persons can make themselves very unhappy by allowing their minds to dwell upon such things.

TANNING SMALL SKINS.—Here is my young friend "W. L.," who writes from Massachusetts, asking me how to tan small skins. I have done a great many odd jobs in my life, but I don't think I ever tanned a skin; but as the next best thing to it, I have been told how to do it. Several years ago I was in the great wilderness of northern New York, a part of which is now so famous as the Adirondacs, and had for a guide a famous old trapper. I saw that he had a cap made of some nicely dressed skins, and I asked him to tell me how to do it. His instructions if put in print, would read thus: "Yer git some ellum, some Peter, and some salt, and mix 'em."—"Hold on a minute, what do you mean by ellum—not slippery elm?"—"No, this white stone ellum you git down to the settlements"—"Oh, Alum! and the Peter?"—"That's what you pickle beef with."—"Saltpeter, well, Alum, Saltpeter, and salt, what then."—"Pound 'em as fine as you can git 'em, and then——" "But how much of each?"—"How much, why say a han'ful of the ellum, and a han'ful of salt, and half a han'ful of Peter; you have 'em fine and mix 'em good, then have all the little bits o' meat and fat pulled off of the skin, and sprinkle the stuff all over the inside on't."—"How much?"—"Well, put it on good, till the skin looks white, 'like a barn-door in a frosty mornin'—then you turn in the edges, and roll the skin up tight, and jest let it alone for three or four days."—"What then?"—"Then you take the skins down to the run, and kerslosh them about in the water until the stuff is all off, then you give 'em a wash with soap and water, and hang 'em up to dry."—"Is that all?"—"No, 'cause they would dry hard and stiff, so when they begin to dry, you must pull and stretch 'em—pull side ways, head and tail ways, and criss-cross, everyhow—and the more you pull onto 'em, the slicker and softer they'll be."—All this was told with much side talk by the camp-fire many years ago, and I never supposed I should have any use for it. Perhaps you will see that you need two parts each of alum and salt, and one part of saltpeter, all fine, sprinkle the flesh side of the skin with this, enough to make it white, roll up for 3 or 4 days; wash first with clean water, then with soap and water, and pull while drying.

ABOUT FREEZING.—Master "L. B.," in Illinois, writes, "what makes water at times freeze onto the bottoms of rivers, and not freeze on the top; again it will freeze in the pail, or rather become one mass of slush ice."—The formation of ice at the bottom of a body of water, is not a very common occurrence, and its doing so at all, has been a puzzle to philosophers. Such ice is known as "anchor ice," from its being found at the bottom, and the explanation given is this: You all know that 32° is the freezing point of water, but water does not always freeze when cooled down to 32°. Pure water cooled very slowly, and kept without the least disturbance of its surface, has had its temperature lowered to 21°, without becoming solid; but the slightest motion caused it to become ice at once. Anchor ice is formed in very cold and very still weather, when the whole body of water has cooled to 32°, and on account of the great tranquility has not frozen; it is supposed that the water being all at the freezing point, the ice forms first on the bottom, because of its roughness; the stones, sticks, and other substances, afford points to which the crystals of water may attach themselves. You know if you have a solution of alum, or a strong syrup of sugar, in a smooth vessel, and put in a string, stick, or other rough substance, the crystals of alum and sugar, will form on the rough surfaces of these, in preference to the smooth sides of the jar or other vessel. The ice under the conditions mentioned, seems in a similar manner to prefer to gather upon the rough surface of the bottom, to forming upon the smooth surface of the water. I understand you to say, though you have not expressed it so positively as I wish you had, that this same water in which anchor ice had formed, turned into slush ice when taken up into a pail. This would be very good evidence that the water had cooled to 32°, or below, without freezing, the disturbance of taking it up causing sudden freezing to occur. It is said that anchor ice sometimes forms to the thickness of three inches, and when it can break away from the substances to which it is attached at the bottom, it rises to the surface like other ice. This is a very interesting matter, Master B., and I hope that when another opportunity occurs, you will see if the conditions are as I have above named; observations on the temperature of the water, and that of the air, with the thermometer, and the condition of the air as to tranquility, will help you to decide how far this explanation meets your case.

WHAT MAKES THE ICE GROAN?—The unusual cold, and its long continuance the past winter, have set my youngsters to thinking about the things that belong to winter, for here is "T. G.," in New Jersey, would like to know what causes the ice to make a noise in winter. He does not say a "groan," but in some countries people are superstitious enough to think these noises a groaning that foretells some evil. The cracking and snapping of ice is easily accounted for. As you are aware, solids generally expand with heat, and contract when cooled; but water has the curious trick of expanding with the loss of heat, after it has cooled down to 39°; still when it has become solid ice, that obeys the usual law, and indeed contracts more rapidly by loss of heat, than any other solid. Now if a pond or stream is covered with ice, and the temperature sinks to zero and below, the sheet of ice will contract, and as it goes on shrinking, the weakest part must give way, which it sometimes does with a loud bang. A loud report will at a distance sound like a dull rumbling, which those who very much wish to do so, can make sound like a groan.

JOHN O'GROAT.—"E. J.," Missouri, Miss., wishes to know who John O'Groat was, and what worthy thing he did.—I can not tell who John was, other than that he, as his name would show, was a Scotchman; the only thing so far as I know, that he did, was to give his name to nearly the northernmost point in Great Britain, where his cottage once stood; the place is in the county of Caithness, Scotland, very near the sea, and though the cottage is gone, the place is still called John O'Groat's House. People in Great Britain say, to express extremes of distance, "from Land's End to John O'Groat's House," that is from the farthest south or south-western point to the most northern point, just as we say "from Maine to Georgia," and in olden times it was "from Dan to Beersheba."—Your other questions about two persons traveling, one east and the other west, is an arithmetical puzzle that has been discussed for years; if I come across anything about it, I will give it to you, but I have not the time to give to the working out of the problem, as I do not think the result will pay for the labor. THE DOCTOR.

Curious Bible Notes.—It is said that a prisoner in solitary confinement, by working three years, obtained the following items: The Bible contains 66 Books; 1,189 Chapters; 31,173 Verses; 773,602 Words; 3,686,489 Letters....The word LORD occurs 1,855 times; the word AND 46,277 times....The shortest verse is John xi. 35; the longest verse, Esther viii. 9. ..Ezra vii. 21, contains all the alphabet except J....2 Kings xx., and Isaiah xxxviii. are similar; and in Psalms cvii. the 8th, 15th, 21st, and 31st verses are alike....All the verses of Psalm cxxxvi. end alike. We have verified the first two and the last six items above, and suppose the figures for the verses and words are correct.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. Ironed dunces.
2. Not cousins.
3. Bound legs.
4. So mend paces.
5. Tigers in den.
6. A fair dose.
7. Cured Danny.
8. Cid echo psalm.
9. Defines fuss.
10. I'm a lay partner.

BIBLE EXERCISE.

(Give the names, in an alphabetical list, here defined.)

A. Father of light.
B. Seventh daughter.
C. Green herb.
D. Little woman.
E. A bunch of grapes.
F. Happy or prosperous
G. Valley of Grace.
H. Exaltation of Life.
I. A man of murder.
J. A revenger.
K. The city of the woods.
L. A she-wolf.
M. A comforter.
N. The gift of God.
O. Servant of the Lord.
P. Small.
R. A rose.
S. Myrrh.
T. Well educated.
U. Strength of God.
V. One that drinks.
Y. Memory of the Lord.

G. C. W.

CHARADE.

A verb that often lends its aid
Unto composing youth or maid,
United with a word not large,
Names one who, in the public barge,
With head erect, imposing form
Encased in garments fine and warm,
Without a single eyelash quiver,
Sails calmly down the golden river. HENRY.

NUMERICAL ENIGMAS.

1. I am composed of 27 letters:
My 17, 6, 27, 19, 26, 14, 8, is a man's name.
My 21, 25, 15, 12, 5, 23, 2, is a wild animal.
My 10, 3, 7, 1, 25, 24, 3, 7, is a man's name.
My 4, 11, 18, 22, 1, 13, is a number.
My 9, 16, 20, 23, is useless.
My whole is an old saying. HERBERT J. K.

2. I am composed of ten letters:
My 2, 6, 8, is an insect.
My 7, 10, 2, 8, is another insect.
My 4, 9, 7, is an animal.
My 3, 4, 9, 1, is something to exhibit.
My 5, 8, is a pronoun.
My whole is a Territory. HARRY H. BRAKELEY.

ACROSTIC.

The initials from a lesson that all should learn.

1. A prince of ancient Wales. 2. A late Methodist divine. 3. A Persian general. 4. An Episcopalian divine. 5. Pertaining to the sea. 6. A species of dove. 7. A late sovereign. 8. A useful tool. 9. Part of the human body. 10. A city of New York. 11. A stinging insect. 12. Old-fashioned. 13. Another stinging insect. 14. A scream. 15. An article of clothing. 16. A picture. 17. Another kind of picture, 18. The mouth of a river.

LITTLE ONE.

CONCEALED STATES AND COUNTRIES.

1. How swiftly the ape runs, does he not?
2. Well, Farmer Brown, do you hire land?
3. Oh! I owe you fifty cents, do I?
4. Has that ore gone to the foundry yet?
5. James, I am going to the concert to-night.
6. But you can see Ida home, if you like.
7. It is painful to witness such destitution.
8. The bark "Alice" landed here to-day.

ALBERT AND AUGUSTA.

DECAPITATION.

When shot from bow with steady nerve,
Seldom from the mark I swerve;
But when the tyro tries to hit
It, far and wide I often flit.

Behead: the thrust by ruffian dealt,
Is stopped by me, though still it's felt;
Behead me once again, and now,
You'll never find me near the prow. HENRY.

CROSS WORD.

My first is in bread but not in roll,
My next is in rat but not in mole,
My third is in ale but not in beer,
My fourth is in bison but not in deer,
My fifth is in Bill but not in Joe,
My sixth is in rain but not in snow,
My seventh is in one but not in two,
My eighth is in Susan but not in Lou,
My ninth is in night but not in day,
My tenth is in August but not in May,
My eleventh is in chisel but not in saw,
My twelfth is in teeth but not in jaw,
My thirteenth is in mouse but not in rat,
My fourteenth is in lean but not in fat,
My fifteenth is in wren but not in lark,
My sixteenth is in bite but not in bark,
My seventeenth is in me but not in you,
My eighteenth is in purple but not in blue,
My nineteenth is in ton but not in pound,
My twentieth is in square but not in round,
My twenty-first is in Jupiter but not in Mars,
My twenty-second is in sun but not in stars,
My twenty-third is in Mary but not in Jane,
My twenty-fourth is in wheat but not in grain,
My twenty-fifth is in prison but not in jail,
My twenty-sixth is in thresher but not in flail,
My twenty-seventh is in grass but not in weed,
My whole is a book that I like to read.

CAPT. JOHN W. W.

PI.

Hypap si ch how nac kate rawginn romf het sipsham fo throes.

SQUARE WORDS.

Square the words "ASTER" and "SPAIN."

GILES FARMIN.

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

ANAGRAMS.—1. Humiliate. 2. Galvanize. 3. Resonant. 4. Velocipede. 5. Ligatures. 6. Legislature. 7. Predominant. 8. Ancestors. 9. Utopian. 10. Curmudgeon.

CONCEALED NAMES.—Bridget, Lucy, May, Ella, Cora, Edwin, Mary, Grace, Amos, and Ida.

DOUBLE ACROSTIC.

S- ahar -A
C- a -B
O- sag -E
T- rafalga -R
L- aplan -D
A-Palache-E
N- eus -E
D- o -N

CITIES.—1. New Bedford. 2. Aspinwall. 3. Pondicherry. 4. Georgetown.

NUMERICAL ENIGMAS.—1. National. 2. "People will talk."

SQUARE WORDS.

1.	2.
C L O D	B O A T
L A K E	O G R E
O K R A	A R T S
D E A R	T E S T

CROSS-WORD.—Charles Sumner.

DECAPITATIONS.—1. Robe, obe. 2. Grate, rate. 3. Clash, lash. 4. Crash, rash. 5. Gloom, loom. 6. Shark, hark!

PI.—Time is the most subtle yet the most insatiable of depredators, and by appearing to take nothing is permitted to take all.

PARAPHRASED PROVERB.—Time, thyme; and Tide, tied Wait, weight; For, four; No man.

Thanks for puzzles, letters, etc., to Xeryion, Frank H., C. W. B., Kipp (or Xipp), J. A. M., A. R., E. S. D., B. F. O., Emily, L. W. G., Harry J., S. T., Minnie W., and J. W. C.

Send communications for the Puzzle Box to Aunt Sue, Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.

May and May-day.

Last month we had to go a long way back to find out how April got its name; and we shall find the same thing necessary with other months. Why May is so called, does not seem to be well settled. Some say it was named from the Maia, who was the mother of Mercury. The ancient Greeks and Romans had a great many gods and goddesses. Neptune was the god of the sea. Flora was the goddess of flowers, and so on. Mercury was the messenger of the gods—ran of errands for them, and Maia was his mother. These old fables we laugh at now, but we are obliged in various ways to remember them, for we can not look at the thermometer without being reminded of Mercury, after whom the metal was named, and the same name is found among the planets. In this month the ancients had celebrations in honor of Flora, and that custom was continued, and was the origin of the celebration of May-day, which has been a holiday in England from the very earliest time until now. Going into the fields to gather flowers, and choosing a "Queen of May," is still the custom in England. Some try to follow this custom in our northern states; they find but few flowers, and generally come home very cold and cross. North of Virginia, May-day, as a holiday, is a failure, and, however we wish to keep up the customs of our great grandfathers and grandmothers, it is in most places much pleasanter to observe the holiday in June.

The Kind of Lead in Pencils.—"John C. C.," Ohio. You are right. The "lead" in lead-pencils is not lead at all, though it is called "black-lead." The weight, if nothing else, tells you that. It is a mineral, called *graphite*, (from the Greek word to write), and is more nearly related to coal than to lead. You have learned that both coal and the diamond are forms of the element, carbon: Graphite is still another shape in which carbon is found; it usually contains a very little iron. Plumbago is another name for it. It can not be melted, but at a very high heat, will burn. The fine kinds are very scarce. This answers your question, but much more could be said about it, and we may tell it some day.

A True Dog Story.

Some months ago we asked for stories about dogs, several have come in, and we should be glad of more. A well known literary gentleman, gives this for the boys and girls: One of our old friends, (he is a large Newfoundland dog,) makes his way through the world on three legs. Several years ago he lived in the country. One day he was frolicking about in a meadow, in which a mowing machine was working. Suddenly he gave a spring directly in front of the knives, and in a twinkling one of his legs was cut off a little way above the foot. With a yell and a bound he was quickly out of further danger, but almost immediately returned, on his three remaining legs, to where the accident occurred. After smelling about for it, he found the missing leg, took it in his mouth, carried it to the house, and up six steps of a piazza, when he laid it down before one of the family, and looking up piteously, said as plainly as a dog could, "please fix it for me."—The dog being too valuable to lose, he was taken to an outbuilding, the wound carefully dressed, and in a few weeks the stump healed over. After getting about again, he hunted up the missing leg, which had been thrown into an adjoining field, and buried it. *This* dog evidently had his *thoughts* about him.

Answers to Aviary Puzzle No. 443, (April).—In this some of the figures alone represent the name of the bird, such as *kite*, while with others it is necessary to combine two, as L—ark, for lark. 1 and 10, Cedar Bird.—3 and 2. King Fisher.—4. Crow.—5. Kite.—6. Diver.—7. Whippoorwill.—8 and 10. Snow Bird.—9. Jay.—10. Black Bird.—11. Finches.—12 and 10. Butcher Bird.—13 and 10. Cat Bird.—14. Lark.—15. Rail.—16 and 10. Thistle Bird.—17 and 10. Tailor Bird.

Some Strange Insects.

In this country we often meet with people who believe in signs and warnings, but we do not have nearly so many such persons as are to be found in some parts of Europe, where there is very little education among the working people. In many farming districts in England, there are stories told about most of the common plants, insects, and other animals, that have been handed down from father to son, and mother and daughter, for these hundreds of years. Sometimes a person curious in such matters, will gather up the "folk-lore" as it is called—(which means the knowledge of the people), of his district, and publish it in some book or magazine, and very amusing reading it sometimes makes. In Europe there is a sphynx, or night-flying moth, related to those you see about the flowers at dusk, having upon its back some light markings, which, if you try hard to make them, look somewhat like a skull and cross-bones, and is called the "Death's Head Moth." Of course an insect, bearing such an unpleasant badge as this, would excite the fears of the ignorant, and when we add to this the fact that it is capable of making a kind of squeaking noise, we have materials for very wonderful stories. As this moth is frequently mentioned in books and other writings, we give a picture, that you may see what it is like. It is found in England, and on the Continent of Europe, and its appearance is regarded by the ignorant everywhere as a sign of evil. It is sometimes thought to foretell war, or famine, and should it, attracted by the light, enter the room, and flying at the candle, put it out, there is sure to be a death in the family—and then the poor thing, probably from having burnt itself, gives out its squeaking noise, which is regarded as moaning over the fearful thing which is to happen. But it is not necessary to tell you more of the absurd stories, and surely not to tell you that the coming and going of this moth has no more meaning than that of any other moth or other insect. Really the only harm done by the moth, with the unpleasant name, is to steal the honey away from the bees. ....Among the insects about which wonderful stories are told, are the lantern-flies—not the fire-flies that we see on a warm summer's night, nor those curious beetles from the West Indies which shine so brightly, and which are sometimes brought here alive, but some South American and Chinese insects, which have a very large head, and a turned up, sort of half transparent, snout, like the one in the engraving. Travelers have told great stories about these living lanterns; they flew into the thick trees, and lighted up their darkest recesses; one lady had some presented to her in a box, and when she opened it, a stream of flame came out; and this same lady is said to have made a drawing of the insect by its own light! Beautiful provision of Nature, is it not, that the insect should be provided with this lantern of a substance like thin horn, to light its way about. The only trouble is that no scientific travelers have been able to see this lantern lighted, and though there is a capital place for a light, it is stated that there is none. On the other hand, it has been suggested that this insect may give light at some seasons, and not at others. So when you read the accounts of the wonderful lantern-fly, you can say that up to the present time it is "not proven."

The Long Saturday Afternoon.

The title above is the name the artist gives to the picture. Boys, don't you think that the artist has "been there?"—Can you conceive of any more irksome position than that of the youngster turning away at the

THE LANTERN FLY.—(*See page* 191.)

grindstone, knowing that all the while his playmates are waiting outside for him to join them in a game or in a ramble through the woods? "It's mean, that's just what it is, to make that boy turn the grindstone," do some of you say? Now that is not what the picture is given you for, and we do not wish to encourage any such feeling as that. "Is there any thing meaner than turning a grindstone?"—Yes, there are a great many things meaner. It would have been much meaner for the boy, when he saw his father coming with the ax, to slink away and get out of sight, shirk the work instead of standing up to it manfully, if it is disagreeable, as this sturdy youngster is doing. We agree, because we know from experience, that turning a grindstone is irksome, and if the tool is dull, and is held on hard, it is far from being easy work. Still every farmer's boy almost, has some time or other to do it. If it would take a hired man from his work, and perhaps leave a team standing idle at a time when every hour was precious, wouldn't you *volunteer* to turn the stone, and feel that you were being useful? In this world everybody who is of any use in it has to work in some way or another, and while turning the stone is not the kind of work one would choose, somebody has to do it, and the boy who can help the work of the farm go on regularly, is in part repaying the many things that are done for him. Why not turn the grindstone? Look at that little chunk of a fellow; he has no doubt arms that are hard and strong, and would tell in a rough and tumble play against a much larger boy. Many a city youngster who is lank, thin, and flabby, has several dollars a month paid for him that he may go to a gymnasium, where he can pull at weights, and climb a rope to try to get some exercise, and all this is probably done at the top of some high building, where there is poor air and not very good light. Here is this boy having his gymnasium all for nothing, and his exercise is doing some good; besides, he has the free air, the bright sunlight, the smell of the hay in the barn, and of the flowers without; the birds are singing, fowls cackling, crickets chirping, and all is so different from the city, that the boy is "getting up his muscle" under conditions that money cannot buy. "But it is so tiresome, there is so much sameness about it, turn, turn, turn, and one turn just like another."—Well, can't you think? To most kinds of work you must give both your body, and your mind, but in turning, you need only give your body. Main strength is all that is needed. The next time you turn the stone, see if you cannot so occupy yourself that the work will not seem irksome. You might count how many turns you make, that would be better than nothing, but not very instructive.—"But what can one think of when he turns a grindstone?"—Well, suppose you begin with the grindstone itself. "A stone, but not like most other stones, a kind of sandstone called grit. Now we know that all sand and pebbles must once have been parts of a solid rock, ages and ages ago this rock must have been broken up by ice or fire or ground up somehow, into little grains of sand; then these grains must have been carried along a rapid stream to a still place where they settled; then, oh how long ago! this water disappeared, and there was the sandy mud which grew harder and harder, it may be by pressure over it, but it was so many thousand years ago nobody can tell, and at last it was hard as we see it now. Every sand-stone is not a "grit," and will not do for grindstones. Only that from very hard rock will answer. Then some one discovered the quarry, and such a drilling and blasting, such a hammering and pecking to get it out! It may have been in Ohio, or perhaps in Nova Scotia, for those are the two great places for these stones, somebody got this one out, and after a while it got here, and here it is, and I turn, turn, turn."...."I wonder what it all does. I turn the stone, the stone sharpens the ax—as I turn, turn, turn. Oh I know, the Doctor talked about particles, and there are too many particles of steel around the edge of that ax, and I must knock them away with the hard particles of sand of the grindstone. As I turn a particle of sand hits a particle of steel and off it goes—turn, there go some more; turn, turn, turn—whew how the little bits of steel get away from the edge of that ax; let's give em some more, turn, turn, turn, that's it old fellow. You grindstone just do your part and I'll show you the virtue of grass and grain—yes, grass and grain. Didn't the ox eat grass and grain, and didn't I have a beefsteak for dinner, and isn't the grass and grain making a revolution with this grindstone. Hurrah for science, it tells all about turning grindstones and the revolution of the earth on its axis. I wonder what turns that, it must be a big job,".... "Splash! now I don't want the water coming at me at that rate. Wonder what they use water on the grindstones for at all? It makes a muss. Didn't the stone get wet enough while it was being made? Let's see. I

THE DEATH'S-HEAD MOTH.—(*See page* 191.)

tried to grind my jack-knife one day with a dry stone, and didn't I make the sparks fly; my knife turned all sorts of colors, and John said I had heated and taken the temper all out of it. I know it was never good for anything after that. Oh, I know, they put the water on to keep the ax from getting heated and spoiled, as I turn, turn, turn....I wonder where that heat comes from——"That'll do, my boy, you never turned so well before."—"Yes, and I haven't half got through with the grindstone story," you think. You see it was a kind of work that you couldn't put much thought into, and you had to occupy your mind with something else while the hands were working mechanically. In much of our work it is not the body that gets tired so much as the mind, but there is very little work that boys are set at that really uses up the body as much as a turn at foot-ball or other active games....If you do not like our way of making the work of turning seem less tedious, you can try Pat's. Pat was a laborer employed at a ship-yard to turn a grindstone. There were a great many men working there, and so many tools needed sharpening that Pat was kept constantly turning from morning until night, and very tired he got. One morning the foreman came early to the yard, and saw Pat turning away at the grindstone all alone, with no one holding a tool. He asked: "What are you doing there, Pat?"—"Faith, sur, I was just tryin' to git a few turns ahead."

THE LONG SATURDAY AFTERNOON.

Easter.—"One of our boys" in Pennsylvania wishes to know why people eat eggs on Easter; he is a very matter of fact boy, and "can see no sense" in the custom. Easter is the day on which the resurrection is celebrated, and on that day it has long been the custom to make presents of colored eggs. A live bird comes out of what seems like a dead egg, and this was supposed in some manner to represent the resurrection—life coming out of death. Whether this was the origin of the custom or not, the giving of eggs on Easter was practised over 400 years ago, even by kings, who had them handsomely ornamented. At the present time it is the custom in some places to have colored eggs, and children play games with them to try which has the hardest shell. The custom has come down through these many generations, and if, as our young friend thinks, there is "no sense" in it, there is certainly no harm in eggs on Easter.

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For spring of 1875 will be ready in February, with a colored plate; Free to all my customers, to others price 25 cts.; a plain copy to all applicants free. Washington City, D. C.

NORWAY SPRUCE.
To the trade, nice transplanted stock, 9 to 12 inches, $4.00 per 100; $25.00 per 1,000.—15 to 18 inches, $6.00 per 100; $40.00 per 1,000.—20 to 24 inches, $8.00 per 100; $60.00 per 1,000. Capital stock for transplanting or hedges. Address
STORRS, HARRISON & CO., Painesville, Lake Co., Ohio.

Fine Choice Flowers Free.

THE GREENBROOK & PATERSON CITY NURSERIES give to purchasers of their plants, ELEGANT ALBUM CHROMOS of ROSES, FLOWERS, PLANTS, &c. Samples *sent free*, with our List of Choice New Collections and Rare Novelties, on receipt of stamp for postage. Our Descriptive Catalogue *mailed free* to all applicants. P. O. address, Box 857, Paterson, N. J.

New Excelsior Lawn Mower.

LARGEST sale of any LAWN MOWER in the WORLD!

It has been adopted, and can be seen in practical operation at **Central Park** and all other **City Parks, New York; Government Grounds** and **City Parks, Washington; Boston Common, Boston; Prospect Park, Brooklyn;** and on almost every prominent Park throughout the **United States and Canada.**

At the trial held in New York City, on the 25th of June, 1874, the NEW EXCELSIOR was awarded the **First Premium** (a Silver Medal) by the American Institute, in competition with all the different Lawn Mowers made in this country.

Four sizes for hand-power; four sizes for horse-power.
Prices from **$15** to **$200.**
EVERY MACHINE WARRANTED.

CHADBORN & COLDWELL M'F'G CO.,
☞ Send for Circular. **Newburgh, N. Y.**

CITY AND COUNTRY TRADE
SUPPLIED WITH THE

Celebrated Excelsior Lawn Mower.

H. B. GRIFFING,
60 Cortlandt Street, N. Y. City.

HILL'S ARCHIMEDEAN.

THE LEADING LAWN MOWER OF THE WORLD.

These celebrated machines are now so universally known where Lawns are cultivated, that they require but little description. The only Lawn Mower operated by an adjustable handle, by which the operator can hold the handle at any desired hight, and at the same time allowing the machine to adapt itself to the surface of the ground, preserving its beautiful and level cut. It is beautifully made and finished, and does splendid work. If you want a beautiful lawn, buy the "Archimedean"—it will last longer, do nicer work, and make a handsomer lawn than any Lawn Mower ever put into the market. Every one warranted. Three sizes for hand and Two sizes for horse-power. The little croquet mower cutting a swath 10 inches wide, the 12-inch size, also the standard hand-size cutting 14 inches wide. A Pony mower cutting 28 inches, and Horse mower of 32 inches.
Send for illustrated circular. Address

Hill's Archimedean Lawn Mower Co.,
Colt's Armory, Hartford, Ct.

Evergreens very Cheap. See advertisement in *Agriculturist* for March and April. Catalogues for stamp. WM. MORTON & SON, Allen's Corner, Maine.

THE BEST SWEET CORN TRIUMPH.

This new and superior variety is the result of ten years of careful selection, it is the earliest of all the large varieties, and unsurpassed for its richness, sweetness, and delicacy of flavor, and is highly endorsed by reliable and prominent parties who have given it a trial. Nothing can surpass it as a market variety.

Select ears, 50 cts. each; Packets containing sufficient seed for 25 hills, 25 cts; 5 packets, $1.00.

(*From Prof. Thurber, of the American Agriculturist, N. Y.*)

A single trial of this variety, (The Triumph), convinced us of its great excellence, and we regard it as "tip-top."

(*From J. J. Thomas, Editor of Country Gentleman.*)

Was exceeding pleased with the Triumph Sweet Corn. It is very tender, sweet and rich—all that can possibly be desired in a table corn, vigorous in growth, and productive.

(*From Rev. T. B Romeyn, D.D., Hackensack, N. J.*)

In comparison with other varieties the Triumph was most decidedly superior.

Price, 25c. a packet; 5 packets, $1. Select ears, 50c. each.

B. K. BLISS & SONS, P. O. Box 5712,
No. 34 Barclay St., New York.

Seedsmen and Florists,

who expect their supplies from us this season, will do well *to send their orders at once*, to secure their goods in season. The superior quality of our Rustic Goods and Red Cedar Labels has so piled the orders upon us, both from this country and England, that we are forced to give this **fair warning** to intending purchasers.

PECK & SKILTON, Westville, Conn.

SWEET POTATO PLANTS.

Nansemond, by Express.....$5 00 per 1,000.
Southern Queen, by Express.....$8 00 per 1,000.
Southern Queen and Nansemond, by mail, 75 cts. per doz.; $1.00 per 100. A full list and very large stock of well-grown vegetable plants now ready, at satisfactory prices. Price List to all applicants free. HENRY E. ACKER,
Seed and Plant Grower, Woodbridge, N. J.

SWEET POTATO PLANTS.
YELLOW NANSEMOND.

Best variety for general cultivation. Shipped safely for long distances by express. Price, 1,000 for $3.00; 2,000 for $5.00; 5,000 for $10.00. Send for Circulars.
M. M. MURRAY & CO.,
Foster's Crossings, Warren Co., Ohio,
or 44 East Pearl St., Cincinnati, O.

SWEET POTATO PLANTS.

SOUTHERN QUEEN, the Earliest and best for Northern planting—30 cts. per 100; $2.50 per 1,000. By mail at double these rates. All kinds of Vegetable Plants in season. We are still sending out by mail
EIGHT POT-GROWN ROSES for One Dollar.
Catalogue Free.
W. F. MASSEY & CO., Chestertown, Md.

SWEET POTATO

And other hot-bed plants—northern grown for northern use. Price-List and Plant Circular treating at length of all transplanted crops, sent free.
J. B. ROOT, Seed Grower, Rockford, Ill.

PLANTS. 4 Var. Sweet Potato, 10 Var. Cabbage, 12 Var. Tomatoes, by mail, 50c. per 100. Express, $3.50 " 1,000. Securely packed. WM. L. ORANGE, Albion, Ills

THE VICTOR POTATO.

28 Fill a Bushel, yields over **700 Bushels** per acre with ordinary Farm cultivation. Cooks as white as snow. Sent post-paid, 50 eyes, $1.00; 150 eyes, $2.00. Address
A. C. ASHALD, Garrettsville, O.

CHOICE SEEDS, PLANTS, & BULBS. A Catalogue of Choice Bedding Plants, Seeds and Bulbs sent free to all who apply. Extra Plants, Seeds and Bulbs added gratis to every order. Don't fail to send for a Catalogue.
Address **E. B. JENNINGS, Southport, Conn.**

SMALL FRUIT PLANTS,
SEEDS and POTATOES.

The largest and most complete Collections in the U. S.—Everything warranted true to name. Catalogues and Price Lists free. Address
REISIG & HEXAMER,
New Castle, Westchester Co., N. Y.

Plants, Potatoes, Vines, &c., Pure, small lots prepaid by mail. See page 111 March No., or send for low prices to
JOHN S. COLLINS, Moorestown, N. Jersey.

STRAWBERRY PLANTS

By the 100, 1,000, 10,000, or 100,000. Wilson's Albany, Charles Downing, Triomphe de Gand. Also Monarch of the West, Col. Cheney, Boyden's No. 30, Black Defiance, Kentucky, Lenning's White and Brown's Wonder in large quantities. A. HANCE & SON,
Nurserymen & Florists, Red Bank, N. J.

The Bellevue Nursery Company

THE NEW DOUBLE DWARF LOBELIA.

Invites attention to their fine stock of the New double **Lobelia,** New and Choice **Pelargoniums, Fuchsias. Carnation La Belle.** and other **Carnations,** Hybrid perpetual **Tea, Noisette,** and other **ROSES,** and to their large stock of Bedding and House **Plants** generally. Also to their Very Choice Stock of **GARDEN** and **FLOWER SEEDS.** Sent by Mail or Express to all parts of the country.

For our Beautifully illustrated descriptive Catalogue address

THE BELLEVUE NURSERY COMPANY,
PATERSON,
NEW JERSEY.
H. E. CHITTY, Supt.

S-E-E-D-S

Choicest Flowers—Best Vegetables.
Elegant Books on Gardening GIVEN AWAY
to our customers. New 100 page Illustrated Catalogue now ready. Free to all. WOOD & BELLOWS,
(late WOOD & HALL,) Geneva, N. Y.

Beautiful RUSTIC WORK

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Settees and **Chairs** with ornamental open work seats, combining **coolness, comfort, strength,** and good taste.

Every cultivator of choice blooming plants should use our **Pot-Stands. HANGING BASKETS** for the million.

Catalogues (illustrated) free.

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RUSTIC WORK.

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Made from Natural Growth of Wood.

The most attractive, ornamental, and durable embellishment of the garden and portico in summer, and for window decorations in winter.

SUMMER-HOUSES FITTED UP,
PARKS EMBELLISHED,
COUNTRY SEATS BEAUTIFIED.

Having the most extensive manufactory in the United States, we are prepared to fill orders of every kind, from a single bird-cage, to the complete furnishing of a park with rustic work. Send for Illustrated Circular and Price-lists.

Address **JAMES KING, New Haven, Ct.**

100,000 VERBENAS IN 100 VARIETIES.

Verbenas by mail, 20 strong plants for $1.00; 100 for $4.50; 1,000 for $40.00. By Express, 50 for $2.00; 100 for $3.00; 1,000 for $25.00. All strong and healthy. Our strain of Verbena seed will produce more first-class flowers than any other in the market. 20 cts. per packet; 5 packets for 75 cts. Send for our New Catalogue of Seeds and Plants. W. F. MASSEY & CO., (late Massey & Hudson,) Chestertown, Maryland.

ROSES Fine everblooming and other roses sent safely by mail post-paid everywhere, and their safe arrival guaranteed.
6 for $1; 14 for $2. A splendid premium rose with each package when **ten cents** is added. A large collection of **bedding plants, shrubbery, &c. CATALOGUE FREE TO ALL.** Address
JOSEPH T. PHILLIPS,
West Grove, Chester Co., Pa.

Roses for the Million!

12 choice Roses, assorted Colors, sent by mail for $1. Always give satisfaction. Lists free
TYRA MONTGOMERY, Mattoon, Ill.

BEAUTIFUL EVERBLOOMING

ROSES

STRONG POT PLANTS
Suitable for immediate Flowering. Sent Safely by mail, post-paid.
Five Splendid Varieties, purchaser's choice, $1; 12 do., $2.
For 10 cts., additional, we send
MAGNIFICENT PREMIUM ROSE.
Our elegant Spring Catalogue for 1875, describing more than two hundred finest varieties of Roses, and containing full directions for culture, with chapters on Winter Protection, Injurious Insects, &c., &c., is now ready, and will be sent to all who apply.
THE DINGEE & CONARD CO.,
ROSE GROWERS,
West Grove, Chester Co., Pa.

MEYERS & ELLY, Wholesale Dealers & Commission Merchants
IN GREEN FRUITS AND PRODUCE.
83 MURRAY ST., NEW YORK.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.
(Established 1845.) **No. 279 Washington-st., N. Y.**
Reference, *Irving National Bank.*

ARE YOU GOING TO PAINT?

OVER 300,000 HOUSES

PAINTED WITH THE

Averill Chemical Paint.

White and all the fashionable shades mixed ready for use and sold by the gallon.

EXTRACTS FROM OUR LETTERS.

P. T. BARNUM: "Your Paint is the handsomest and most durable I ever saw."

HON. JAS. NEGLEY, Pittsburgh, Pa.: "Altogether I find the 'Averill' the cheapest and best."

PETER HENDERSON, Esq.: "The 'Averill' has proved superior to lead and oil."

C. W. SPOONER, Treas., Cordage Co., Plymouth, Mass.: "The 'Averill Chemical' has proved good."

C. A. ALLYN, Esq., Palmyra, N. Y.: "The 'Averill Paint' is as bright to-day as when applied three years ago."

Hundreds of testimonials from owners of the finest residences in the country, with Sample Card of Colors, furnished free by dealers generally, and by the

AVERILL CHEMICAL PAINT CO.,

32 Burling Slip, New York; or 132 East River St., Cleveland, Ohio.

THE BEST PAINT

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ANY SHADE FROM PURE WHITE TO JET BLACK, AND, AS IT IS MIXED READY FOR USE,

EVERY MAN CAN BE HIS OWN PAINTER.

The incorporation of RUBBER in our paint makes it *unequaled* by any other. It is unaffected by change of temperature, and is perfectly waterproof. It presents the finest possible finish, will not crack or peel off, and is in every way the "*Best Paint*" for either inside or outside painting, is from one-fourth to one-third cheaper, and lasts three times as long as the best lead and oil paints. The almost *unanimous verdict* of the many thousands who have used our paint is that it is *far superior* to any other paint in use.

Be sure that our TRADE MARK, (a fac-simile of which is given above,) **is on every package.**

The great popularity of and demand for our paint has necessitated the establishing of "*Branch Factories*," as follows:

No. 506 West street, New York City; No 83 West Van Buren street, Chicago, Ill.; No. 210 South Third street, St. Louis, Mo.; and a Wholesale Depot at Wm. King & Bro., No. 2 North Liberty street, Baltimore, Md.

Sample Card and Price-list sent FREE on application.

Wolcott Bros.,

Real Estate and Loan Brokers,

TOLEDO, O.

Real Estate purchased, managed, and sold on commission. Large properties a specialty. Money loaned on Real Estate. All money transmitted through the banks.

Correspondence Solicited.

HARNESS

FOR THE TRACK, ROAD, PARK, or FARM, at $8 to $500 per Set.

Also Blankets, Hood Sheets, and everything requisite for the Track, Road, Farm, or Stable use. The largest variety of Horse Furnishing Goods of any House in this country—no exception. **C. M. MOSEMAN & BRO.,**

Manufacturers, 144 Chambers St., N. Y.

Send for Illustrated Price-List.

Bushberg Catalogue of Grape Vines now ready; sent by mail, post-paid, for 25 cts. Address **BUSH & SON & MEISSNER, Bushberg, Jefferson Co., Mo.**

MAPES' FERTILIZERS.

MAPES' NITROGENIZED SUPERPHOSPHATE.—A Complete Fertilizer, made from Animal Matter (Bone, Flesh, Blood, etc.)

Awarded a *Silver Medal*, Oct., 1874, by the New Jersey State Agricultural Society (Prof. Geo. H. Cook, State Inspector of Fertilizers and State Chemist, Chairman of Committee), for "*excellence* and *quality* of *preparation*.

MAPES' SUPERPHOSPHATE AHEAD OF ALL OTHERS!

See analysis published in last (1875) Annual Report of the New Jersey State Board of Agriculture, Prof. Geo. H. Cook, State Chemist:

Soluble Phos. Acid, 7.90.....Ammonia, 3.40.

Guaranteed Standard, on dry basis, Ammonia, 2.60 to 3.60 per cent; Dissolved Phosphates, 14 to 20 per cent.

(For analyses by State Inspectors of Fertilizers at Savannah, Ga., and Charleston, S. C., January, 1875, see advertisements, pp. 112 and 113, *American Agriculturist*, March No.)

This fertilizer may be applied in the drill, at the time of planting, or broadcast *at any time* on Field, Vegetable, and Grain crops; also for laying down grass lands; also Flower Gardens, Grape Vines, Fruit Trees, etc.

Price, $50 per ton, packed in barrels (.50 lbs. net), or new bags, (200 lbs.) No charge for packages or cartage.

For further description of the above fertilizers see advertisements, pp. 112 and 113, March No., *American Agriculturist*, or pamphlets, containing analyses, testimonials, etc. Apply to

CHARLES V. MAPES, 160 Front Street, New York.

HATCH'S SPRING BED BOTTOM.

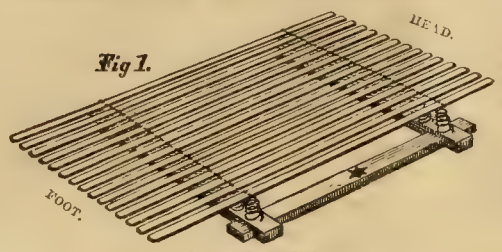


Fig 1.

Composed entirely of wood and wire; **has no hiding places for vermin.** The slats are adjustable, and reversible, upon the springs. Noiseless, and without lateral motion. The most comfortable and durable Spring Bed in the market. Guaranteed to be strong enough for two persons aggregating 500 lbs. Can be readily taken apart. A full sized bed measures when packed 8 inches square, by 6 feet, and weighs 25 lbs. Is thus extremely portable. **Can be easily taken into the country for the summer, to place under badly made, lumpy beds.**

PRICE LIST.

5 ft. 3 in.	x6 ft.	$7.50
5 "	x6 "	7.00
4 " 9 "	x6 "	6.50
4 " 6 "	x6 "	6.00
4 ft.	x6 ft.	$5.50
3 " 6 in.	x6 "	5.25
3 "	x6 "	5.00
2 " 6 "	x6 "	4.75
2 "	x6 "	4.50

Will send bed, **freight prepaid,** to any R.R. depot east of the Mississippi River, upon receipt of price.

GOODELL COMPANY, Antrim, N. H., Manufacturers.

W. S. BLUNT, 77 Beekman St., New York, Agent. Depot of the the People's Pumps.

GRAPE VINES,

Grown especially for the Trade, very fine, and at low prices. CONCORD, HARTFORD PROLIFIC and MARTHA, in large quantities.

A. HANCE & SON Nurserymen & Florists, Red Bank, N. J.

GRAPE VINES.—The largest and most complete collection. Our *illustrated descriptive Catalogue* now ready. Sent post-paid, for 25 cts. Price List free. Address BUSH & SON & MEISSNER, Bushberg, Jeff. Co., Mo.

LADIES READ THIS

Sent safely 2,000 miles.

15 Verbenas, 15 kinds, - -	$1 00
12 Basket-plants, 12 kinds, -	1 00
12 Bedding-plants, 12 kinds,	1 00
8 Roses, 8 kinds, - - -	1 00
8 Geraniums, 8 kinds, - -	1 00

All named sorts, our choice.
100 other things cheap.
A premium offered to clubs.
A 60-page Catalogue free.
21st year, 400 acres, 11 greenhouses.
STORRS, HARRISON & CO.
Painesville, Lake Co., Ohio.

The Bushberg Catalogue

OF

American Grape Vines.

A new enlarged and entirely revised edition of our Illustrated Descriptive Catalogue is now ready. Besides a complete manual and guide for the successful cultivation of the Grape, it contains the most complete description and classification of varieties, so far published. Every Grape grower should have it. Mailed to all applicants for 25 cents.

BUSH & SON & MEISSNER, Bushberg, Mo.

L. B. CASE

offers for the spring sales of 1875 a choice collection of Ornamental Greenhouse and Bedding Plants, in the very best condition, at as low rates as can be found anywhere. Plants sent by mail to all parts of the country.

RICHMOND, INDIANA.

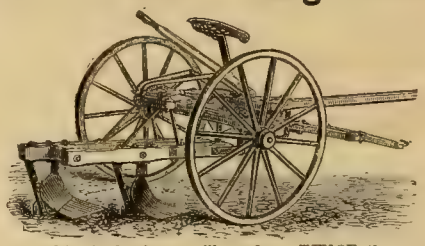
NANSEMOND SWEET POTATO

and Cabbage Plants, May and June, by mail, post-paid, 65 cents per 100. Express 500, $2.00; 1,000, $3.00; 3,000, $8.00; 5,000, $12.50. Drumhead and Flat Dutch, 500, $2.00; 1,000, $3.00.

S. GRAY, Norwalk, Huron Co., Ohio.

FARM FOR SALE.—Three miles from Saratoga Springs, containing 100 acres, with good buildings. Price, $4,000. Address JOHN H. CARR, Saratoga Springs, N. Y.

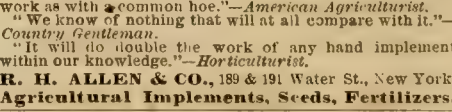
The Volcano Gang Plow,



Compared to single plows, will perform TWICE the work with HALF the team, and save at least Eight Dollars per day to any one plowing even no more than 15 or 20 acres. Cuts 24 inches at every round, and works on any land suitable to machine mowing. Light draft; can be managed by a boy or an old man. Endorsed by *American Agriculturist* and COUNTRY GENTLEMAN, as well as by many noted farmers. For full particulars apply to

CARR & HOBSON, 56 Beekman St., New York.

Circulars to all applicants with stamp.



"HEXAMER'S PRONG HOE"
(TRADE MARK)

Hexamer's Prong-Hoe.

PRICE $1.50.

"A man with one of these can do several times as much work as with a common hoe."—*American Agriculturist.*

"We know of nothing that will at all compare with it."—*Country Gentleman.*

"It will do double the work of any hand implement within our knowledge."—*Horticulturist.*

R. H. ALLEN & CO., 189 & 191 Water St., New York.

Agricultural Implements, Seeds, Fertilizers.

OVER 28,000 IN USE.

THE BEST for PRACTICAL PURPOSES.

Seven sizes, for sale by Hardware Dealers generally, and by the makers.

GRAHAM, EMLEN & PASSMORE,

No. 631 MARKET STREET, PHILADELPHIA, PA.

Our Illustrated Catalogue

of valuable books for the Farm, Garden, and Household, will be sent post-paid to applicants.

ORANGE JUDD COMPANY, 245 Broadway, New York.

Standard Architectural Books
FOR CARPENTERS AND BUILDERS.

Hussey's National Cottage Architecture; or, Homes for Every One.—With Designs, Plans, Details, Specifications, and Cost; with Working Scale, Drawings complete, so that Houses may be built direct from the book. Adapted to the popular demand for practical, handsome, and economical homes. Royal Quarto. Six Dollars, post-paid.

Atwood's Country and Suburban Houses.—Illustrated with about 150 engravings. Hints and Suggestions as to the General Principles of House-building, Style, Cost, Location, etc. Post-paid, $1.50.

Monckton's National Stair-Builder.—Is a complete work on Stair-Building and Hand-Railing. Fully explained and illustrated by large scale diagrams, in two colors, with designs for Staircases, Newels, Balusters, and Hand-Rails. Royal Quarto. Post-paid, $6.00.

Monckton's National Carpenter and Joiner.—A complete work, covering the whole science of Carpentry, Joinery, Roofing, Framing, etc., fully explained and illustrated by large scale diagrams in two colors. Royal Quarto. Postpaid, $6.00.

Woodward's National Architect.—1,000 Designs, Plans, and Details for Country, Suburban, and Village Houses; with Perspective Views, Front and Side Elevations, Sections, Full Detail Drawings, Specifications, and Estimates. Also, Detail Drawings to Working Scale, of Brackets, Cornices, French Roofs, Sectional and Framing Plans of French Roofs, Dormer-Windows for French Roofs, Bay-Windows, Verandas, Porches, Plaster Finish, Cornices, Ceilings, Hard-wood Mantels, and all that is required by a Builder to design, specify, erect, and finish in the most approved style. One superb quarto volume. Post-paid, $12.00

Woodward's Cottages and Farm Houses.—188 Designs and Plans of low-priced Cottages, Farm Houses, and Out-Buildings. Post-paid, $1.50.

Woodward's Suburban and Country Houses.—70 Designs and Plans, and numerous examples of the French Roof. Post-paid, $1.50.

Woodward's Country Homes.—150 Designs and Plans, with Description of the Manner of Constructing Balloon Frames. Post-paid, $1.50.

Woodward's Graperies and Horticultural Buildings.—Designs and Plans of Hot-Beds, Cold-Pits, Propagating Houses, Forcing Houses, Hot and Cold Graperies, Green Houses, Conservatories, Orchard Houses, etc., with the various modes of Ventilating and Heating. Post-paid, $1.50.

Wheeler's Rural Homes.—Houses suited to Country Life. Post-paid, $2.00.

Wheeler's Homes for the People.—100 Original Designs, with full Descriptions, and Constructive and Miscellaneous Details. Post-paid, $3.00.

Harney's Barns, Out-Buildings, and Fences.—Containing Designs and Plans of Stables, Farm-Barns, Out-Buildings, Gates, Gateways, Fences, Stable Fittings and Furniture, with nearly 200 Illustrations. Royal quarto. Post-paid, $6.00.

Lakey's Village and Country Houses, or Cheap Houses for All Classes, comprising eighty-four pages of designs. The object, in almost every instance in these designs, has been to secure as large an amount of space and comfort as was possible with the least expenditure of money, without neglecting the exterior features of each building. Royal Quarto. Post-paid, $6.

Eveleth's School-house Architecture.—A new and original work, containing Seventeen Designs for School-houses, Sixty-seven Plates with Perspectives, Elevations, Plans, Sections, Details, Specifications all drawn to working scale, with methods of Heating and Ventilation. Large quarto. Post-paid, $6.00.

Copley's Plain and Ornamental Alphabets.—Giving examples in all styles, together with Maps, Titles, Borders, Meridians, Ciphers, Monograms, Flourishes, etc., adapted for the practical use of Surveyors, Civil Engineers, Draughtsmen, Architects, Sign Painters, Schools, etc. Post-paid, $3.00.

ORANGE JUDD COMPANY, Publishers, 245 Broadway, New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 171.

Hogs versus Dogs.—A newspaper item, says a Missouri farmer reports that in 32 counties, 10,602 sheep were killed by dogs—a loss of $30,000 or $40,000. But this is nothing to his further figures. He says an able-bodied dog will eat as much as a hog will need to thrive on; that the hog, at the end of the year, will weigh 200 lbs., worth, at 6 cts. per lb., $12. Then he says the above 32 counties have 462,000 dogs; and if 462,000 hogs were kept instead, the hogs would be worth **$5,544,000,** or about twice the value of all the school-houses in the state, and double the amount used by the state for school purposes. Well, these are pretty strong calculations; but there are 113 counties in Missouri, and after allowing for a very large reduction in the estimates, there is something left in the item worth thinking and acting about—and not in Missouri alone either. Will not some expert lover of figures and statistics, estimate how long it would take for the actual loss by dogs, and cost of keeping them, over their usefulness, to pay off the entire debt of the United States, that is such a load upon all of us in the way of taxation direct and indirect?

Keeping Farm Accounts.—No doubt that the reason why so few farmers keep regular accounts, is the varied character of the business, and the supposed difficulty attending the necessary book-keeping. Several books have been devised especially for farmers, one of the most complete of which is "The Farmer's Accountant," by C. O. & F. Perkins. This provides for the recording of the expenses of the family, and the outgoes and receipts of the farm; allows accounts to be kept with particular fields, with breeding and other stock, with help, etc. Indeed, it would seem as if every possible want in the way of a farm account book was met. Sold by the Orange Judd Company at $3.

Profit from one Cow and 70 Hens.—"G. B. W.," Columbia Co., N. Y., sends the following statement of one cow's product for 1874, viz: 256 lbs. of butter, sold for $92.08; one calf raised, and a family of five supplied with butter and milk. From 70 hens, 252 dozen of eggs and 150 chickens, were sold for $133.91, leaving $52.86 profit, after paying $81.05 for feed. Eggs and chickens were also supplied to the family.

A Shaving Horse.—"C. R. F.," Winchester, Ill. A shaving horse was illustrated in an article upon hoop-poles, in the *Agriculturist* of Jan., 1875.

The Tumbler Cart.—"A. D. E." The tumbler cart illustrated not long ago in the *Agriculturist*, can easily be made by any wheelwright, from the description given with the engraving. It is simply a body hung upon a bent or straight axle, and is tipped by a chain wound upon a roller in front of it.

Catalogues Received.

The following catalogues and business circulars have come to hand since the publication of the last list. Please observe that some dealers carry on two and sometimes three branches of business, but we can only afford space to name them once, under what we take to be the leading department. Hence it will pay to look the all through.

SEEDSMEN.

J. H. & W. G. Cone, Hartford, Conn. Wethersfield garden seeds, wholesale and retail.

Donnelly & Co., Rochester, N. Y. Flower seeds and summer flowering bulbs.

D. M. Ferry & Co.'s Seed Annual, Detroit, Mich. This, by accident, was omitted from last month's list, which we particularly regret, as it is one of the most noticeable of all, and shows remarkable enterprise. Its illustrations are, at least the majority of them, new, and it is altogether an interesting work of 218 pages.

Jordan Horticultural Company, St. Louis, Mo., send two catalogues, one of seeds and wire-work of their own make, and another of nursery and greenhouse stock.

John R. & A. Murdoch, Pittsburgh, Pa., who, besides flower and vegetable seeds, offer a full stock of greenhouse and bedding plants.

Geo. W. Park, Fannettsburgh, Pa., has seeds; also Park's Floral Gazette, to tell what to do with them.

WM. RENNIE, Toronto, Ont., Canada. Flower garden and field seeds, with several specialties.

J. B. ROOT, Rockford, Ill., offers, besides seeds, a large collection of vegetable plants from his hot-beds, and has a neat and instructive pamphlet to go with them.

TILLINGHAST BROS., Factoryville, Wyoming Co., Pa. Garden and flower seeds, and seed potatoes, some of which are not generally known.

VICK'S FLORAL GUIDE, No. 3, gives interesting notes of his California trip; useful hints, and a proper dig at the new postal law. It is perhaps necessary to add that we mean James V., of Rochester.

H. W. WILLIAMS & SON, Batavia, Ill., send three documents; seed and plant catalogues, and a potato circular, which gives instructions in cultivation.

NURSERYMEN.

C. H. BANTA, Rivervale, Bergen Co., N. J. Fruit and ornamental trees, and greenhouse stock.

D. C. BENTON, Quincy, Ill. General nursery stock and greenhouse plants.

BIRD BROS., Newark, N. J., at the Kearney Nursery, besides the usual stock, make a specialty of evergreens.

BUSH & SON & MEISSNER, Bushberg, Mo. Grape vines, This descriptive catalogue is the most complete of anything of its kind that has come to our notice. It is in fact a treatise with more full descriptions and history of each variety than can be found elsewhere, and deserving of a more extended notice than can be given here.

A. P. CHAPMAN, 50 & 52 Vesey st., N. Y. Small stock by wholesale a specialty.

E. J. HOLMAN, Leavenworth, Kas., sends the wholesale list of Astra Nursery.

THOS. JACKSON, 50 & 52 Vesey st., N. Y. Wholesale nursery stock.

SAMUEL KINSEY, Dayton, O. Small fruits, ornamental plants, seedling stocks, etc.

J. W. MANNING, Reading, Mass., has a full assortment, including a number of specialties and novelties.

C. S. PRATT, North Reading, Mass., small fruits.

P. T. QUINN, Newark, N. J., has small fruits, a select list of pears and apples, and various vegetable plants.

E. & J. C. WILLIAMS, Montclair, N. J., offer the leading small fruits, seed potatoes, etc.

GREENHOUSE PLANTS.

P. J. BERCKMANS, Augusta, Ga., has, besides an extensive nursery, a large range of greenhouses, and offers a fine collection.

BURROWS, WOOD & CO., Fishkill, N. Y., include in their plant catalogue a list of fruit and other trees.

B. P. CRITCHELL, Cincinnati, O., has flower seeds as well as flowering plants.

JOSEPH HEINL, Jacksonville, Ill. A compact but full catalogue of ornamental plants, and a fruit list.

HOOPES BRO. & THOMAS, Westchester, Pa., send a plant catalogue almost as large as their list of trees, and it includes various novelties.

G. W. PENNEY, Newark, O., keeps pace with the best in having new things.

J. D. ROBINSON, Bloomington, Ill., though a new accession to the ranks, is, as we happen to know, a competent one, and deserving of success.

JOHN SAUL, Washington, D. C., comes rather late with his catalogue, perhaps because large bodies travel slowly, for this is very large and very full, and the colored plate of the new Queen Victoria Pelargonium makes one impatient to see the plant.

A. WHITCOMB, Lawrence, Kansas, has not so large a catalogue as some, but it is very neat and compact.

WM. C. WILSON, Astoria, (L. I.), N. Y., and 43 West 14th St., N. Y. This immense establishment has about everything, whether new or old.

EUROPEAN CATALOGUES.

WM. BRYCE & CO., Glasgow, Scotland. Wholesale list of vegetable and field seeds.

E. G. HENDERSON & SON, London, England. A seed catalogue that for variety in all departments, is wonderfully full.

TROUPIN-MORREN, Liege, Belgium. Seeds of all kinds, bulbs, roses, etc.

CH. HUBER & CO., Hyères, France. Wholesale price-list of choice plants; Cannas a specialty.

POULTRY, IMPLEMENTS, AND MISCELLANEOUS.

ADRIANCE, PLATT & CO., 155 Greenwich St., N. Y. The world renowned Buckeye Mower & Reaper, which last year took over a dozen premiums at field trials in Europe, and in this country prizes too numerous to mention. So neat and tasteful a catalogue deserves a more extended notice than is here given.

ADAMS & FRENCH HARVESTER. Made by the Sandwich Manufacturing Company, Sandwich, Ill. This implement does not quite make the wheat into bread, but it advances it well towards its destination.

AVELING & PORTER'S Road Locomotives, Steam Rollers, and other implements, some of which have already been described in the *Agriculturist*. Wm. C. Oastler, 43 Exchange Place, N. Y., importer.

BOOKWALTER ENGINE. A portable Steam Engine, for farm and other work. Foos & Jayne, 109 Liberty St., N. Y.

FRED. F. HARRIS, Portland, Maine. Improved Fowls, and Berkshire pigs.

PECK & SKILTON, Westville, Conn., make a great variety of tasteful rustic work, and red-cedar labels of various size and styles.

C. R. RAYNOLDS & CO., New York. An old established color house, send out a treatise on the use of Paris green, and a history of the Colorado beetle.

WOOD, TABER & MORSE, Eaton, N. Y., tell the history of their Portable and Stationary Agricultural Steam Engines.

VALENTINE & CO., Varnish makers, 323 Pearl St., N. Y., send out a business document that is a wonder in the way of beauty, neatness, and interest, it being an account of "How Varnish is Made," copiously illustrated by descriptive engravings, and embellished with several charming silhouettes.

"Walks and Talks" Correspondence.

VALUE OF ESSEX PIGS.—"Champernoun," of Maine, writes as follows to the *Agriculturist*, and the editor sends it to me: "Please tell us through the *Agriculturist* the peculiar excellencies of the Essex pig, that makes it worth four or five times as much as ordinary pigs?"—The Essex is a remarkably quiet pig. He has fine bones, thin skin, small head, and little offal. He is an "easy keeper." The lard is very white and firm, and the quality of the pork is excellent. Whether he is worth four or five times as much as ordinary pigs, depends on how you use him. For crossing with and improving common swine, I would rather pay $25 for a pure bred Essex boar at two months old, than to take a mixed bred or common boar for nothing. And I think this is the testimony of all who have tried pure bred boars of *any* good breed.

PLASTER ON LIMESTONE LAND.—"H. W. S.," of Cincinnati, Ohio, writes: "I often notice recommendations to use certain manures, and generally without any reference to the chemical composition of the land."—All soils contain the same elements of plant-food. They differ only in the proportions, and in the degree of availability. An ordinary soil analysis throws very little light on the matter. We have to judge from experience and actual trial.—"I wish to enquire," continues H. W. S., "if plaster would be beneficial or harmful here, when our whole neighborhood is underlaid with limestone, and when I should suppose the soil is already highly impregnated with lime."—This has nothing to do with the action of plaster. Limestone land is often greatly benefited by liming. And plaster is perhaps usually more efficient and valuable on dry limestone land, than on any other. Try two bushels per acre on clover or corn. I think it will be found valuable for clover, and perhaps for corn. My own farm is a limestone soil, and plaster is a very useful manure for clover, corn, potatoes, peas, and sometimes for barley, grass, and wheat.

OATS AND PEAS.—I have a dozen or more letters asking about my plan of sowing oats and peas together. All I can say is that it is a good crop with me, provided the land is rich enough. If peas do well in your section, and you have a rich piece of ground, and want feed for sheep, drill in two bushels of peas and two bushels of oats per acre. The black-eyed Marrowfat is a good variety for this purpose—or for sowing alone. I drill in the seed mixed carefully together, and in sowing stir the seed occasionally in the hopper.

GREEN MANURING FOR CORN.—"I have a field of 25 acres," writes a correspondent at Trenton, N. J., "to be put in corn in 1876. The field is seeded with clover and timothy, and has been mowed twice. Now which of the following plans would be preferable? 1st. To plow the crop of grass under, the middle of June, and sow the ground with oats and rye, to be plowed down again in the fall, just before frost. Plow again in the spring and plant corn. 2nd. Let all the growth of 1875 remain upon the ground, and plow under in spring of 1876, in time for planting corn. Is there anything better for sowing in June or July than oats and rye? I keep a dairy of 25 cows, which are fed mainly on fodder corn in summer."—I do not think oats and rye a good crop for green manuring. White mustard, if the seed did not cost so much in this country, would be better for sowing in June or July, for this purpose, or buckwheat, or even corn fodder. But I must confess that I do not like the plan of green manuring, unless you can do nothing better. It is a great waste of valuable food. The 2nd plan is open to the same objection. I should not like to see good grass rotting on the land, with 25 cows eating corn-fodder in the yards. I do not see what is to be gained by it. I would rather keep more cows and raise more corn-fodder and good, rich grass. I *think* I would sow 150 lbs. of superphosphate, and 150 lbs. nitrate of soda, per acre, on the grass field. Mow it for hay. Then pasture it in the fall, and, if desirable, plow up and plant corn the spring of 1876. You will find yourself with 30 or 40 tons of good hay in the barn, and this will help to make manure for the corn crop, and the *nutriment* in the hay, (which is of no value as manure), ought to be worth much more than the cost of the artificial manures.

BRAN AND CLOVER FOR PIGS.—"D. B.," Champaign, Ill., writes: "My Essex sow and boar are doing well. It is hard to keep them down to breeding condition. Have reduced their feed to pure bran, scalded with slop water, and although they get not more than half as much as they would eat, they are still too fat. I have four five-months-old pigs. Same trouble with them. With four parts of bran and one of meal, by measure, they are curiosities of adiposity. Had I clover hay, would cut and feed as you state in Walks and Talks you do with your breeding sows. How is it that bran, containing so small a proportion of fattening matter, should have such an effect when fed?"—There is more nutriment in bran than many think. Until your pigs get to be seven or eight months old, such food as you describe will not hurt them, no matter how fat they get. They ought to be fat. They have been bred to take on fat at an early age. The pen of five pigs, under six months, I showed at the N. Y. State Fair last year, weighed about 200 lbs. each. They had been fed bran, corn meal, and some milk. I suppose they would be considered too fat for breeders. But such was not the case. After the fair I turned them out in a pasture. They are as healthy, thrifty pigs as any in the herd. I think the true plan is to feed well-bred pigs all they will eat and digest, as long as they are growing rapidly. When they have nearly got their growth, if intended for breeders, let them have less nutritious food, and plenty of exercise.

MANGEL-WURZEL.—"C. H.," Bloomington, Ind., wants to raise an acre or two of mangels. "Can they be drilled by hand" he asks, "as there is no such a thing as a small seed drill here."—There are several good drills advertised in the *Agriculturist*. If you sow by hand, the better plan is to mark out the rows 30 inches apart, and then drop two or three seeds in holes, made in the row, 15 inches apart. I used to plant in this way before I used the grain drill. It has some advantages over drilling. You can soak the seed for 48 hours, and the plants come up quickly, often a week or ten days earlier than if not soaked. Then if you know your hills are 15 inches apart, as soon as you can see a plant in a hill, you can hoe on each side of it, knowing that there are no more plants for fifteen inches. For making the holes in the row, take a piece of pine scantling, 3x3. Bore inch holes in it 15 inches apart. Put pegs in the holes, and let them project downwards two or three inches. Bore a hole in the center, and drive in an old rake or hoe handle, on the side opposite the pegs, and you have a useful tool for making the holes.

In regard to the culture of mangels, all I need say is, if you raise good beets in the garden, the same treatment will enable you to raise mangels in the field. No matter about the kind of soil, or the kind of manure. Make the former mellow and clean, and apply plenty of the latter, and harrow it into the soil after spreading, and then plow it in. Harrow again and again, and roll before and after planting.

VALUE OF MANURE FROM BRAN, &c.—A Maryland subscriber writes to the *Agriculturist* that "Walks and Talks" in the February number must have made a mistake in putting the value of the manure from a ton of wheat at $11.94, and that from a ton of bran at $24.32.—If I have I do not know it. If he will read my remarks again, and tell me where the mistake is, I will correct it. He thinks if my figures are correct, any farmer can make money by feeding stock. Perhaps so. But all I wished to show was that my neighbor could get nitrogen and phosphoric acid cheaper by feeding stock than by buying artificial manures.

BONES AND HOW TO USE THEM.—"Z. H. P.," Delaware, writes, that he looks upon bones as the best fertilizer, and wants to know how best to use them.—I would not dissolve them in acid, for any farm crop except turnips. —"Will it pay," he asks, "to use potash with bones for wheat?"—I think not.—"Would you compost the bone dust with horse manure for corn?"—It is a good plan. But probably your heap will get too hot. Ordinary farm manure containing cow and pig as well as horse manure, will not be so liable to ferment too rapidly when mixed with the bone dust.

WHAT TO SOW ON CORN STUBBLE.—"G. W. C.," Xenia, Ohio, has a good farm. His corn crop on clover sod av-

erages 80 bushels shelled corn per acre. Has raised as high as 95 bushels per acre. Oats do not do well. Has never raised peas. He wants to sow some crop on the corn stubble and follow it with winter wheat. He asks: 1st. "Would potatoes, if manured with well rotted manure, leave the land in good condition for wheat?"—Yes; unless it is too light and sandy, but your manure should be rich, and you should use it freely, say 15 tons per acre.—2nd. "Would mangel wurzel be off in time to sow wheat?"—No.—3rd. "Would oats and peas be apt to succeed. Have raised oats six feet high."—I cannot say, but I think you would be warranted in trying a few acres.—4th. "If oats are sown, would it not be better *for the land* to cut them green and cure as hay?"—This is the prevalent idea, but I doubt if it is true. The grain in ripening gets its nutriment from the straw, and not directly, to any considerable extent, from the soil.—5th. "Would the oat-hay be worth as much as the ripe oats?"—I suppose you mean ripe oats and straw together. This may or may not be the case. If I could get a good crop of heavy oats I would let them stand; but if, as you say, you can grow straw, but not grain, I would cut and cure as you propose.—6th. "Do you feed mangels cut or uncut?"—I cut them for sheep and cows and young pigs. Feed whole to large pigs.—7th. "Would you drill the mangels or raise the plants in beds and transplant?"—I have rarely had "good luck" in transplanting mangels. I do not think the plan a good one in our dry climate, and with our high wages.

UNDERDRAINING.—"G. R. S.," Whiteside Co., Ill., has a rolling farm. The water accumulates in the intervales and sometimes destroys the corn and other crops. He asks about underdraining it. I should dig holes in the land three feet deep, and if the water remains in them four or five days after rain, it will probably pay to underdrain. But if not, I would try to get off the water by plowing a deep dead furrow through the lowest land.

SEEDING DOWN A YOUNG APPLE ORCHARD.—"J. F. K.," Pa., writes: "My orchard has been very much neglected. Last fall I set out a lot of young trees. I intend to manure and lime it well, and then seed down with rye and orchard grass, after which I intend to pasture with calves and hogs."—Put the lime on the old orchard; plow it shallow *early in the spring*, or *late in the fall*. The young orchard I would keep in fallow for two years, and work it thoroughly. Then seed down with grass and white clover alone, without the rye.

ARTIFICIAL MANURE FOR CORN.—"An Old Subscriber," Wis., writes: "I have 40 acres sandy clay soil, which has been in wheat every year for five years. Plowed last fall eight inches deep. Shall plant it to corn this spring, in hills 4 feet apart each way, and keep well cultivated. What artificial manure would you advise me to apply to the corn?"—I know of no artificial manure that you can apply with profit. Corn is too cheap with you, and manures too dear. Sow a bushel of plaster per acre on the hills after the corn is up. This will probably pay. Grow less wheat and more clover.

Four Calves at a Birth.—"W. J. C.," Indiana Co., Pa., reports the birth of four calves by one cow in one day. The first two are now alive and doing well, the other two were dead. The weights were 57, 56, 52, and 46 lbs., in all 211. The cow is raising the two calves successfully.

Trouble with Poultry.—"C. G. M. B." If wood ashes are strewed upon the floor of the chicken house, and allowed to mingle with the droppings, there will soon be trouble in the house. The escape of ammonia caused by the ashes will injure the eyes of the fowls, and they will suffer greatly, and in the end become blind. The cause of your trouble is obvious.

Veterinary Practice.—"Dr. H. J. R.," Utah. It would be of immense service to farmers if country physicians would study veterinary surgery, and practice so that they could give advice in regard to troubles with farm stock. It would tend to rid the country of hosts of quacks and "cow-doctors," so called, who are very ignorant of what they profess, and would save much suffering that is now inflicted upon animals. Dr. Dadd's Horse Doctor, and Dr. McClure's Diseases of Cattle, would be useful books to have. Chauveau's Anatomy of the domesticated animals, is a highly scientific work, of value to both veterinary and other practitioners, but useless to any but educated amateurs.

Where Does the Rain Come From?—Some suppose that the rain clouds are driven over us *from some where else*, and drop down the water. The fact is, the rain is in the air over us at all times, even in the clearest weather. The air takes up water in the form of invisible vapors. The warmer it is, the more water it can thus retain concealed, cool it, and it gives up some of this concealed water; the particles coalesce to form visible vapor or clouds, or mists, or fogs, and if the cooling goes on, the vapor drops unite and fall in larger rain drops. If a portion of air above us is at 50°, and contains 800 grains of invisible vapor, and another similar amount of air at 30°, containing 200 grains of vapor, comes along and mixes with it, the whole air will then be only at the temperature of 40°, and will be able to hold only 800 grains, and as the two portions contained 800+200 or 1,000 grains, 200 grains of water will become mist or clouds, or in part fall as rain. Thus it is, that the mixing of warm and cold air, or the cooling of the air from any cause, squeezes out of it, so to speak, the water that was before held entirely concealed as invisible vapor.

Potash for Potatoes.—"W. J.," Jacksonville, Fla. There should be no difficulty in getting plenty of wood ashes in Florida, without buying potash. Palmetto stems yield a larger amount of it than any other vegetable substance. If, however, potash must be bought, it is best to procure the German salts, (Kainit). It may be purchased of the dealers in fertilizers in New York and elsewhere.

How to use Hen Manure.—"D. P. M.," Brooksville, Vt. The manure from the poultry house is valuable for any crop. It may be spread on grass very thinly, about two barrels per acre is enough. One way to get it fine, is to spread it upon the barn floor and trash it with a flail, but a wet cloth should be tied around the mouth or nose while this is being done.

It is useless to write for our opinion about sowing seeds, killing pigs, or having calves born in the light or the dark, the new or the full, the wax or the wane of the moon—or whether water can be found by the use of a witch-hazel or other rod—or if wheat will turn into chess—or if a doctor who advertises his cures, or warrants to cure will do what he promises. It is a waste of time, stationery, and postage, to write us upon any such matters, as we have better use for space in the paper than to reply to such there, and better use for our time than to reply by mail if postage is sent for an answer.

Many Keys in One.—It is often convenient to have a key that will wind more than one watch, and J. S. Birch, 37 Maiden Lane, N. Y., makes a key that will wind any watch. It is adjustable at once, by a mere touch, and is one of the clever little inventions that add much to one's convenience.

Pond Muck.—"A. B. K.," Lancaster Co., Pa. The sediment of mill ponds and races is generally of the same character as swamp muck, and will answer the same purpose for an absorbent or a fertilizer. It should be dry and allowed to drain for one season, if it is to be used in the stables. If not, it may be mixed with lime as it is dug.

An Inch of Rain.—An acre of land contains 43,560 square feet of surface. A cubic foot of water weighs 62½ lbs.—A wine gallon of water contains 231 cubic inches, and weighs about 8⅓ lbs., (or accurately, 8.3388822 lbs.) This is the Winchester or standard gallon of the U. S. [The N. Y. standard gallon weighs 8 lbs.]—A barrel of 31½ gallons standard, weighs 262⅝ lbs., (accurately 262.67469 lbs.) *Therefore:* An inch deep of rain on an acre supplies 226,875 lbs., or over 113 tons, or 863⅓ barrels of water. Every one can readily tell how much water is supplied by each inch of rain-fall upon his farm, or village plot, or city lot, or upon the roof of his dwelling. For example, if his house be 20 by 30 feet, there will be 600 square feet, allowing nothing for projecting eaves, and each inch of rain will give 600×144÷1728, or 50 cubic feet of water, equal to 3,125 lbs., (over 1½ tons,) or nearly 12 barrels, and 42 inches rain per annum, would give about 500 barrels....At our country residence, over 5 inches (5.183 in.) of rain fell during March 1875. This amounted, on a single acre, to over one million, or 1,175,893 lbs., or 4,473 barrels; that is, about 580 tons, or 4,473 barrels of water-fall on each acre for the month of March alone. In all cases snow is melted, and its water reckoned in the rain-fall....A drain-pipe, 2 inches in diameter, if the water all moves in it at the rate of 3 miles per hour, will discharge about 347½ cubic feet per hour, or in 10⅓ hours would carry off 1 inch rain-fall on an acre....The *average* annual rain-fall at Cambridge, Mass., is 38 inches; at Philadelphia, Pa., 45 inches; at Western Reserve College, O., 36 inches; at Marietta, O., 41 inches; at Fort Crawford, Wis., 30 inches; at St. Louis, Mo., 32 inches; in the British Islands, 32 inches; in Western France, 25 inches; in Eastern France, 22 inches; in Central and Northern Germany, 20 inches; while in some tropical regions, the amount runs up to 100, and in a few localities, to over 200 inches. At Catskill, N. Y., July 26, 1819, 18 inches fell in 7½ hours....Taking an average of 40 inches rain-fall a year, we have of rain-water, on every acre, 9,075,000 lbs., or 4.237½ tons, or 34,533 barrels.

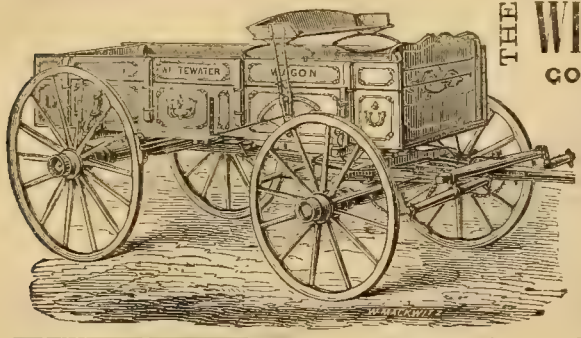
Salt Pork for Cows.—"J. A. W.," recommends a few slices of salt pork to be rolled in rye bran or corn-meal, and given to a cow that is ailing, having a poor appetite, or having "lost her cud," or is suffering from indigestion. This is simply a ready substitute for a dose of linseed oil, which is quickly effective in such cases. The stomach seems to sometimes need fat as well as salt, to assist digestion, and the salt of the pork is both useful in itself, and acts as an inducement to the cow to swallow the pork.

Why Sparrows?—A gentleman writes from Richmond, Ind., inquiring if European sparrows can be procured, as it is proposed to introduce them into one of their city parks.—Have the Richmond people duly considered this matter? The birds have now been long enough in this country for us to estimate them at their true value. If the trees of a park, or in the streets of a city, are infested by caterpillars to an injurious extent, and ordinary birds, and other means of destruction failed to get rid of them, then, and only then, should we try sparrows; but where there is no special need for them, we consider their introduction a great mistake. In the rural towns around New York, to which these birds have migrated, they have driven out every native bird, and where the songs of our warblers, song sparrows, and other singing birds were frequent, now nothing is heard but the incessant and monotonous twitter of innumerable foreign sparrows. They will break up the nests of other birds, and even build their own nests over the eggs of the other birds, and by these acts and constant warfare, they soon drive off the more peaceful natives. In a large and crowded city like New York, where few native birds come, this objection has little force, but smaller cities and rural towns better keep clear of them.

Salicylic Acid.—This, though not a new substance, has all the interest of a new one, on account of the recent discovery of properties possessed by it which were heretofore unknown. It derives its name from *salicin*, the bitter principle of the willow, (*salix*), as it was first obtained from that; and it is an important constituent of oil of wintergreen. More recently salicylic acid has been derived from carbolic acid, but the chemistry of the substance will hardly interest the general reader. It is white, in minute crystals, has no odor, a slightly sweetish taste, and is but little soluble in water, an ounce of that taking up only a grain and a half of the acid. The remarkable thing about it is its ability to prevent decomposition of all kinds, whether in animal or vegetable substances. The chief use made of it thus far is in dressing wounds, where it completely prevents all offensive odor. If all the accounts given of it are true, it is the most powerful antiseptic yet discovered, much superior to carbolic acid, and without its disagreeable odor and poisonous qualities. Thus far its use has been mainly confined to surgeons. It now sells for about $1 an ounce, but when it becomes cheaper, as it is likely to be, a great number of uses will be found for it in common life.

The Suez Canal cost $95,000,000, ($23,000,000 more than the Erie Canal,) of which the Egyptian Government contributed $31,000,000, leaving the net cost to the share-holders $64,000,000. The tolls and other receipts for 1873 were $4,945,000, the expenses (23 per cent) $1,125,000, leaving a net revenue of $3,820,000, of which $2,345,000 were appropriated to interest on bonds of $20,000,000; sinking fund, $450,000, etc., leaving $1,475,000, or 3¾ per cent, for dividends to the share-holders. The receipts for 1874, and future years, are expected to show continuous increase, so that the enterprise is nearly certain to be a paying one. These figures are not only interesting as connected with this great international work, but as indicative of the value of the proposed ship canal across the Isthmus of Darien. Our Minister to China, in 1872, reported the United States trade to be about 37 per cent of the whole foreign trade of China. In that year tea was brought from China to Boston, via the Suez Canal, at a cost of 4 cts. per lb.; via steamship to California, and thence by Railroad, 7 cts. per lb.

Tule and the "Chinee."—"F. W. W.," Wis., sends an item in which it is stated that the Chinese in California have found the roots of the *Tulé*, (pronounced Toolay), valuable as food, and that they find a ready market at 6c. per pound, and wishes to know what it is, etc.—The rivers of California have hundreds and hundreds of acres of their margins occupied by a sedge known to botanists as *Scirpus lacustris*, and to the Mexicans as *tule*, a name which Americans have adopted for the plant, and the places where they grow are called tulé lands. But the Pacific Rural Press, which is no doubt well informed, says it is not the tulé root at all that the Chinaman is after, "but a species of artichoke that grows among the tulés."—Evidently some tuber-bearing Helianthus, related to the Jerusalem Artichoke.



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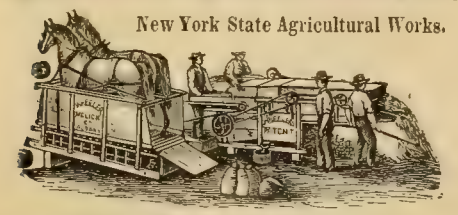

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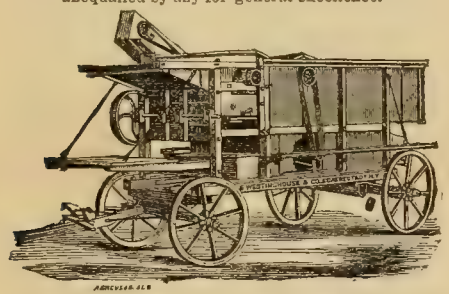

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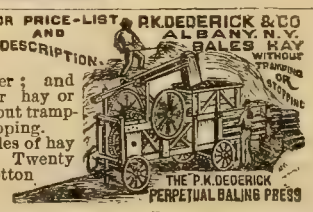

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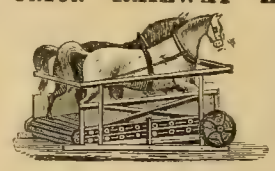

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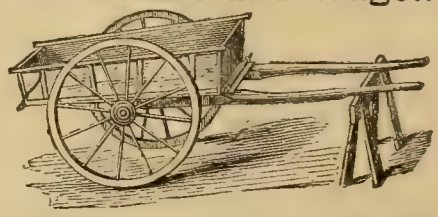

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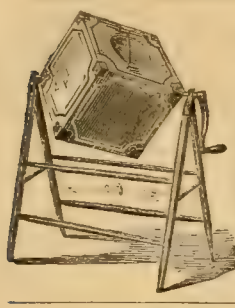

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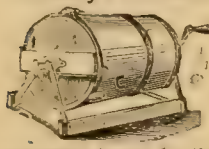

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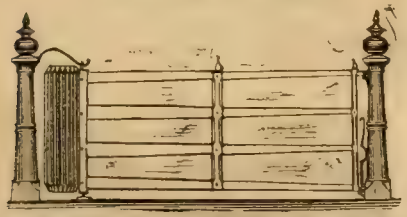

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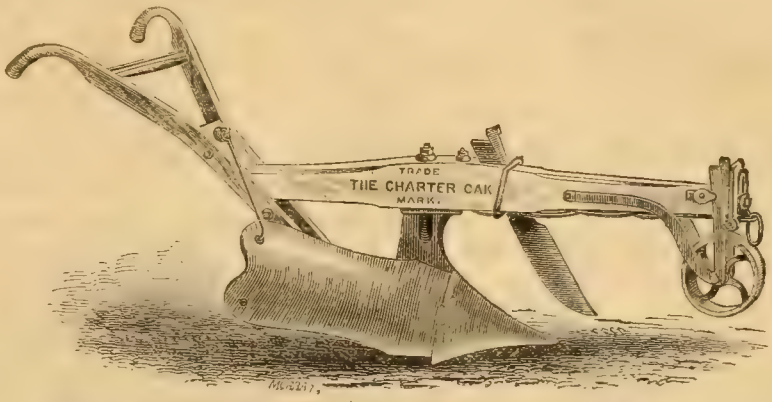

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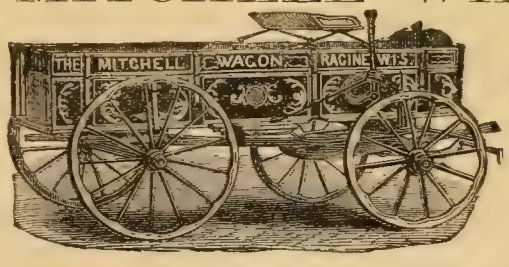

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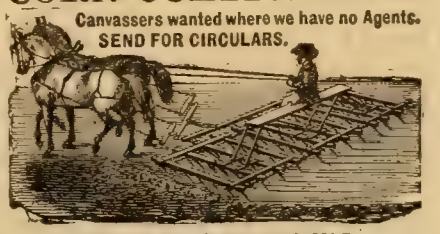

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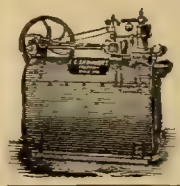

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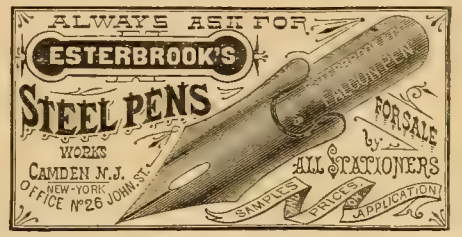

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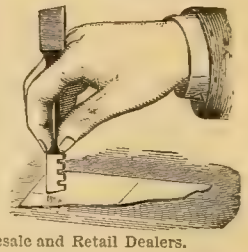

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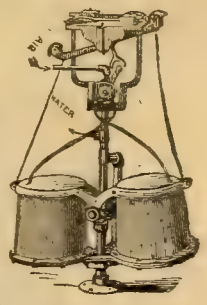

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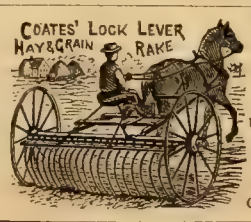

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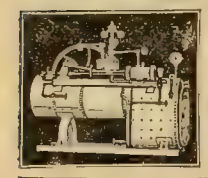

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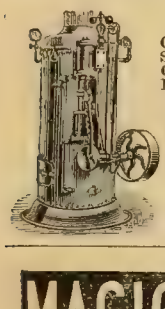

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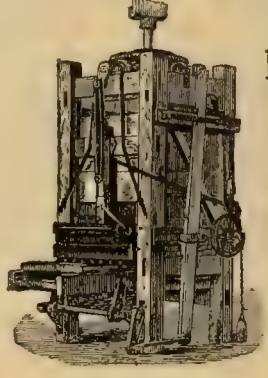

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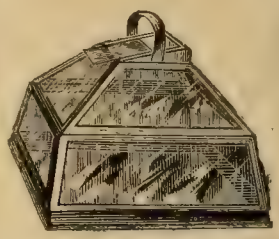

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Binding Harvester.—"H. & B.," Walnut, Iowa. We know of no harvester that binds the sheaves with sufficient success to make it a desirable machine. There are binding harvesters that are in course of being perfected, but at present they are chiefly experimental machines.

To Keep Eggs.—"M.," Joanna Station," Pa. The most cleanly method of preserving eggs, and one as effective as any other, is to smear them with cotton-seed or linseed oil, and pack them, with the large end down, in dry bran, or wheat or oat chaff, (not cut straw,) in a barrel, pressing the whole down closely, and heading the barrel. Kept in a dry, cool cellar, they will remain in good order for six months, if the shell has been clean and thoroughly well oiled.

Calendar for June.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	T	4 26	7 30	2 36	4 32	7 24	2 39	4 35	7 19	2 42
2	W	4 25	7 31	3 7	4 31	7 25	3 11	4 35	7 19	3 16
3	T	4 25	7 32	sets	4 31	7 26	sets	4 36	7 20	sets
4	F	4 24	7 32	9 0	4 30	7 26	8 53	4 36	7 20	8 45
5	S	4 24	7 33	10 00	4 30	7 27	9 53	4 36	7 21	9 45
6	S	4 23	7 33	11 1	4 29	7 27	10 55	4 35	7 21	10 48
7	M	4 23	7 34	11 30	4 29	7 28	11 25	4 35	7 22	11 20
8	T	4 23	7 35	11 58	4 29	7 29	11 55	4 35	7 23	11 51
9	W	4 22	7 35	morn	4 28	7 29	morn	4 34	7 23	morn
10	T	4 22	7 36	0 23	4 28	7 30	0 20	4 34	7 24	0 18
11	F	4 22	7 36	0 44	4 28	7 30	0 43	4 34	7 24	0 42
12	S	4 22	7 37	1 3	4 28	7 31	1 3	4 34	7 25	1 3
13	S	4 22	7 37	1 21	4 28	7 31	1 22	4 34	7 25	1 24
14	M	4 22	7 38	1 41	4 28	7 32	1 43	4 34	7 26	1 46
15	T	4 22	7 38	2 2	4 28	7 32	2 6	4 34	7 26	2 11
16	W	4 22	7 38	2 27	4 28	7 32	2 32	4 34	7 26	2 37
17	T	4 22	7 39	3 0	4 28	7 33	3 6	4 34	7 27	3 12
18	F	4 22	7 39	rises	4 28	7 33	rises	4 34	7 27	rises
19	S	4 22	7 39	8 50	4 28	7 33	8 43	4 34	7 27	8 36
20	S	4 22	7 39	9 35	4 28	7 33	9 28	4 34	7 27	9 21
21	M	4 23	7 39	10 8	4 29	7 34	10 3	4 35	7 28	9 57
22	T	4 23	7 39	10 38	4 29	7 34	10 34	4 35	7 28	10 30
23	W	4 23	7 40	11 3	4 29	7 34	11 0	4 35	7 28	10 7
24	T	4 23	7 40	11 26	4 29	7 34	11 24	4 35	7 28	11 22
25	F	4 23	7 40	11 48	4 29	7 34	11 47	4 35	7 29	11 47
26	S	4 23	7 40	morn	4 29	7 35	morn	4 35	7 29	morn
27	S	4 24	7 40	0 9	4 30	7 35	0 10	4 36	7 29	0 11
28	M	4 24	7 40	0 33	4 30	7 35	0 35	4 36	7 29	6 38
29	T	4 24	7 40	1 1	4 30	7 35	1 5	4 36	7 29	1 9
30	W	4 24	7 40	1 38	4 31	7 35	1 43	4 37	7 29	1 49

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	3	5 37 ev.	5 25 ev.	5 13 ev.	5 1 ev.	4 31 ev.
1st Quart	10	3 11 ev.	2 59 ev.	2 47 ev.	2 35 ev.	2 5 ev.
Full M'n	18	7 12 ev.	7 0 ev.	6 48 ev.	6 36 ev.	6 6 ev.
3d Quart.	26	9 55 mo.	9 43 mo.	9 31 mo	9 19 mo	8 49 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1875.

The present is the latest season for many years. As usual in late seasons we have had a forcible lesson in regard to drainage. Drained fields have been plowed and planted two weeks earlier than undrained ones, and vegetation is quicker upon these dryer and warmer soils. The skillful farmer who takes advantage of every means of improving and enriching his farm, is to a great extent independent of seasons, while another in an unfavorable spring is for a long time prevented from working. This makes all the difference between a good and a poor crop, or even a good crop and none at all. With low prices for most farm products, we must increase our production to the acre, or we must go behind. As in all other occupations, there are in farming those who gain and those who lose. Those who gain are those who save at both ends, they raise large crops, and so dispose of them as to make them realize the utmost—the men, in fact, who farm with brains. The other class begin this late season with less hope than ever. They feel the pressure of hard times while others escape it. There is no help for it but to change their method of farming, to become skilled in their art, to drain where draining is needed; to plow more carefully; to cultivate more cleanly; to husband every one of their resources, to stop every leak, and to be patient and persevere in the right direction.

Hints about Work.

The Corn Crop.—Corn may still be planted and make a good crop. By choosing an early kind, it may, in most localities, be safe to plant up to the middle of the month. The use of 150 lbs. of guano or dried blood manure per acre, or a handful scattered about each hill, and frequent use of the Thomas harrow, Share's horse-hoe, or some other implement that will stir the surface close up to the rows, will advance the growth greatly. If planted by hand, soaking the seed before planting, will hasten the germination, and save a few days. If the seed is to be dropped by a corn-planter, it will not do to soak it previously, as the revolving cups will crush the soft grains. Whatever will promote a vigorous and healthy growth, should be practised.

Fodder Corn may be planted on ground that cannot be made ready in time for the main crop. Late corn planted in drills 30 inches apart, with 10 or 12 grains to the foot in the drill, and some active fertilizer scattered near the seed, but not in contact with, will bring a large quantity of valuable fodder.

Potatoes may yet be planted, but the later the crop, the more work there will be to save it from the Colorado potato beetle. Have on hand a supply of Paris green, ready for the first appearance of the beetles; see article on page 226. One pound will be sufficient for an acre. Cultivate well and keep free from weeds; this is the secret in raising not only good crops, but a good quality of tubers.

Ruta-bagas.—It is as easy to raise 800 bushels of these to the acre, as it is to raise 400 bushels. It depends mainly on the preparation of the ground. The after culture for a large crop costs no more than that for a small one. Rich, mellow, clean soil, is necessary for a good crop. 250 lbs. per acre of superphosphate, or fine done-dust scattered in the drill, will greatly help the young plants. But large crops of roots can not be had without good barn-yard manure as the basis. Sow 2 lbs. of good seed; if it is not fresh, and can not be depended upon, use 4 lbs. per acre in drills 30 inches apart, up to the middle of the month. The soil *must be fine and mellow.* When the fly or "flea" appears, dust the young plants with air slacked lime. To prepare it, as soon as the seed is sown, put a bushel of fresh lime in an open shed, and sprinkle it lightly with water. It will slack to a fine dry powder by the time the plants need it. An ounce of carbolic acid in the water will be a great help in keeping off insects. Thin out the plants to 12 inches apart, as soon as they are established.

Weeds.—No quarter must be given. They must be killed as soon as they appear. Myriads may be killed before they are visible, by the use of the harrow and cultivator. Shallow cultivation is better than deep, as the weeds are left on the surface, where the sun kills them at once. When very young, they have little strength to resist. Early and frequent cultivation will save much hand-labor hereafter. While crops are young, the Thomas harrow is a most effective cultivator.

Beans are a fallow crop. They are not exhaustive, and the necessary cultivation and hoeing will kill the weeds. They are a profitable crop if well managed. They may be planted this month, in rows 27 to 30 inches apart, dropping three or four beans in hills one foot distant from each other in the rows. Cover not less than two inches deep. Plaster is a good fertilizer for beans.

Haying.—Clover hay to be of the best quality, should be cut this month, unless the lateness of the season interferes. The crop should be cut at least as soon as half the blossoms appear; the advantages of early cutting are well shown in Prof. Atwater's article on page 213. The hay should be cured in the cock, and kept by itself in the barn, for young stock and milking cows next winter. Orchard grass should be cut in early blossom, or it will be poor hay. No grass suffers so much from late cutting as this.

Hay Caps are inexpensive. They need not be more than a yard square, costing only 15 cents each. A hundred will cover 10 tons of hay. By using them the hay may be left out safely until a whole field is down and ready to draw into the barn. "Atlantic A," or a yard wide sheeting of the same quality, is the best cloth for caps.

The Mower.—See that the mower is in proper order, all bolts and nuts screwed up tightly; the gearing greased with tallow and black lead; all the bearings clean and kept well oiled; and the knives sharp. Take one of the emery harvest sharpeners into the field, and while the team is resting, touch up the edges of the knives. A sharp knife or scythe makes easy and clean work. It will pay to have a mower even where there is but 10 acres of hay to cut each year, if proper care of it is taken.

Mares and Colts.—Brood mares should not be worked when near foaling. Light work which is no more than moderate exercise, is proper and healthful for them. Give the mare a good roomy box all to herself, with plenty of bedding, and leave her alone. After the foal is dropped, half a

pail full of warm oatmeal gruel will be useful, and if the foal needs assistance, it should be given. Nine or fifteen days afterwards the mare may be taken to the horse. Choose a well built sound stallion, but especially a docile, gentle, and well tempered one. These qualities are reproduced in the colt with great certainty. Never breed from a spavined, ringboned mare. These defects are hereditary, and are thus perpetuated.

Ewes and Lambs.—Ewes from which early lambs have been taken, may be fattened very quickly. Give a pound of corn meal or oilcake meal, even when on good pasture. Keep sheep from swamps, ponds and streams. Water from springs or wells, given in wooden troughs, is the best for them. A handful of crushed oats and corn or bran, will force the lambs along, and nursing ewes should not be forgotten in the distribution. Give salt from the hand once a week, which will make the flock gentle and familiar with their owner.

Swine should by all means have a run at grass, or in a clover field. Pigs are scarce this season, and pork will probably be a profitable thing to have on hand by and by. See article on ringing, page 220.

Sundry Matters.—Wash sheep three or four days before shearing; "tag" before washing, and dip them and the lambs afterward. See article on page 221. Give calves a little scalded bran or oats daily. Force all young animals judiciously, so as to keep them in vigorous growth, but not fat. Plow odd pieces of land that have not been planted, to be sown hereafter with buckwheat or turnips. Clean out the barns, and whitewash them inside. Return all tools, implements, etc., to their places when they have been used, and make hoes, cultivator teeth, spades, and other tools sharp on the grindstone, and keep them so. Remember a workman is known by the condition of his tools, and a sharp tool does good and quick work. Read hints for last month again.

Work in the Horticultural Departments.

Early vegetables and small fruits are ordinarily by this time well advanced, but the cold, late spring has, at least in northern localities, retarded all crops. It is not yet too late to sow seeds of most vegetables for medium and late crops. There should always be several plantings of all quick growing vegetables, to secure a succession throughout the summer. Weeds will be the common enemy to every gardener, and if the best results are wished for, the cultivator, hoe, rake, and other implements must be used constantly. Never allow weeds to become large enough to require hand pulling, as this takes time which can be more profitably used in some other way. Yellow docks, and plants, the roots of which retain their vitality, should be removed at plowing time and burned, else they will be sure to grow, as will purslane, or "pussley," unless raked up and fed to the pigs.

Orchard and Nursery.

The main thing now is to keep the soil loose and free from weeds around the trees and between the rows. If the rows of small fruits are far enough apart to admit a horse and cultivator, the weeds can be killed in much less time than if the hoe and rake only can be used. In using a plow or cultivator among trees, care must be taken not to bark the trunks or break the lower branches; to avoid this, the end of the whiffle-tree should be protected with a thick covering of cloth, and the trace chains covered with leather.

Insects must be destroyed as they appear. Tent caterpillar nests should be taken off either at morning or at night, when they are all in one cluster, and either crushed or burned. Wild cherry trees are favorite breeding places for these insects, and some orchardists prefer to leave them around their orchards as a trap, thinking that caterpillars often resort to these in preference to the fruit trees. So far as we have observed there have been caterpillars enough for both the wild cherry trees and the fruit trees in the orchard.

Young Trees should be mulched, especially if planted last spring. By the judicious rubbing off of young shoots, a young tree may be brought into proper shape, and avoid much pruning.

Slugs are often so numerous as to injure the foliage of the cherry, pear and other fruit trees; lime or ashes dusted upon them, will destroy them; even dry road-dust has been successfully used.

Borers may be prevented from doing injury, by placing a strip of paper for a foot or more around the lower part of the trunk, and allowing its lower edge to reach an inch or so beneath the surface soil. The female insects usually appear this month. Some rub the lower part of the trunk with a corn cob, to destroy the eggs.

Seed Beds must be kept weeded. Young seedling evergreens must be shaded, and during dry, hot weather, the beds watered occasionally.

Grafts set last month, must be looked to, and where shoots appear on the stock to rob the graft, they should be rubbed off, so that all the nourishment may go to the graft.

Pruning.—June is one of the best months in which to prune, but it is the season at which few can spare the time. The wounds should be covered with shellac varnish, or melted grafting wax.

Fruit Garden.

Grapes.—Tie up the young shoots as fast as they grow; if allowed to become too long, there is great danger of breaking. Soft cotton twine, without starch, is the best and cheapest material. Thin out the fruit on vines just coming into bearing. Apply a top-dressing of ground bones or ashes to the soil between the vines, if not already done; stimulating manures must be avoided.

Strawberries.—Mulch as soon as the fruit sets, either with leaves, or cut straw, or hay; if applied liberally, very few weeds will show their heads above it. If plants are wanted to set new beds, sufficient runners may be allowed to grow, if not, cut off as fast as they appear.

Currants.—Cultivate the soil between the rows often, unless the ground is heavily mulched.

Raspberries and Blackberries.—The new canes should be tied up to stakes as soon as they are long enough, otherwise a high wind or driving storm may break them off. Leave only three or four canes to grow to each stool, and shorten them when 4 feet high for raspberries, and 5 feet for blackberries.

Gooseberries are more profitable when marketed in the green state, and should be picked as soon as large enough for use. If mildew appears, use sulphur freely.

Thinning fruit pays in increasing both size and quality, and if practiced judiciously, will prove profitable, and with young trees just coming into bearing, is often absolutely necessary.

Kitchen Garden.

Too much can not be said on keeping the soil free from weeds, and allowing none to go to seed. Extra care in cultivation, will tell in a few years in the diminished crops of these pests of the garden. If it were only known how easy young weeds may be destroyed, we should hear fewer inquiries how to get rid of this or that weed after it has taken possession of the soil. A scratch of the rake at the proper time, will kill weeds that later require a spade for their removal.

Asparagus.—Do not cut after peas have become plenty, as the roots need time to recover from the exhaustion of continued cutting. If there is well rotted manure on hand, it will pay to give a dressing before the tops are allowed to grow. Keep the beds free from weeds until the tops shade it.

Beans.—Plant bush sorts for a succession. It is not yet too late for Limas, if put in at once. Keep the early plantings free from weeds, and provide poles for the running varieties.

Beets and Carrots require thinning as soon as large enough to handle; the young beets make capital greens.

Cabbages of the early plantings will be ready this month for use or market, and the ground may be made ready for celery or other late crops, as soon as cleared. Set out plants of the late sorts from the seed bed. Cut worms and the more common cabbage worms must be watched and destroyed as soon as they appear.

Celery.—Thin out the seed bed, and transplant into good soil, until wanted for setting out permanently. July is early enough for the main crop.

Corn.—Sow every week or ten days until July; sown even as late as the middle of that month, with a remarkably warm fall, a good crop may be had until late frosts come. If more than enough for family use is planted, dry the surplus for winter.

Cucumbers.—Hoe and weed the early plantings, and sow for pickles; the young plants must be kept free from insects, by the use of covers of netting, or a liberal sprinkling of ashes and plaster upon the leaves when wet.

Egg Plants must not be set until the ground is well warmed, and all danger of frost is past; then give them a good, rich soil, and hoe often; if watered occasionally with liquid manure, they will produce extra large fruit.

Lettuce, unless the plants can have shade during a portion of the day at least, they soon run to seed; the north side of a fence or building is the best place for the summer crop.

Melons of all kinds should be planted at once, if not already done, and the same precautions taken to destroy insects, as recommended for cucumbers.

Onions.—Weed and thin. Near city markets it pays best to sell onions before they are ripe.

Parsnips.—Thin before the plants become too large, and cultivate between the rows, until the leaves are large enough to cover the ground.

Peas rarely do well when planted at this late season. If tried, cover at least four inches with earth in planting; as soon as up and hoed, give brush. Clear off the ground from which the early plantings have been gathered, and set cabbages or other plants.

Radishes are hardly worth growing at this season, as they seldom come tender.

Rhubarb.—Do not exhaust the roots by too late pulling. Cut the flower-stalks as soon as they appear.

New Zealand Spinach is the best for summer use, and should be planted in hills three feet apart, but not until the weather is warm; the Round Leaved soon goes to seed, when planted late.

Salsify and *Scorzonera* must be treated the same as parsnips; thin to three inches in the row.

Squashes.—Treat the same as melons and cucumbers, and keep clear of weeds.

Sweet Potatoes.—If not set, do it at once, and plant in well manured ridges, three feet apart.

Tomatoes.—Set out early this month, and give supports of some kind to the vines, otherwise there will be danger of rotting. Many plans of trellises have been given in previous numbers.

Turnips.—Sow the Ruta-baga kinds this month; the black fly will seldom do much damage at this season; if the insects appear, use road-dust or ashes upon the leaves when wet.

Flower Garden and Lawn.

Annuals, sown in the open ground the first of June, in northern localities, do better than when planted earlier, as the ground is seldom warm enough for the most rapid growth before this time.

Bulbs of Hyacinths, Tulips, and other autumn-planted bulbs, may be taken up, and stored in a dry place, and the beds occupied with annuals or bedding plants. Set out Tuberoses and Gladioluses, which have been started in the greenhouse or window, after the weather becomes warm.

Lilies should be kept carefully weeded, and the flower-stalks tied to stakes.

Cannas do best when started in the greenhouse, and then planted out. If dry roots are planted, it takes much longer to make a fine show with them.

Ricinus.—Single plants make a fine appearance,

and especially some of the larger varieties are worth growing, when there is room.

Climbers.—See that supports are provided for all climbing plants, and those that do not climb by tendrils or otherwise, should be tied with soft twine.

Dahlias need stakes to support the flower-stalks, as soon as they appear.

Perennials.—Seedlings should be transplanted and shaded for a few days, until well established. Those having tall, weak stems, will require stakes.

Lawn.—Cut the grass every week, and do *not* remove it, as it serves as a protection to the roots, and also as a fertilizer. Grass near trees must be cut with a grass-hook in order not to injure the tree.

Edgings, if of grass, must be cut and trimmed as often as necessary; probably once a month will be often enough to keep them looking well. The edging-knife should be thrust down far enough to cut off all grass-roots, which grow into the beds or walks below the surface.

Seeds of biennials and perennials do best when sown as soon as ripe. Sow in shallow boxes, set in a frame, where a little shade can be given, either with boughs or lattice-work. Usually the plants will be large enough to transplant in the fall or the following spring.

Greenhouse and Window Plants.

The plants in a window may be kept looking finely during the summer, with proper attention to watering and shading during the middle of the day. The plants should be showered overhead occasionally; those with thick leaves should have the dust removed with a soft sponge.

Window Boxes that have been inside during the winter, may be used for decorating the porch or piazza during the summer; these, as well as hanging baskets, ought to have an abundance of water. Outside window boxes, or balcony-gardens, must not be allowed to dry out.

Bedding Plants must not be set out before the nights become warm, and the soil dry, otherwise they will get a check from which it will take a long time to recover.

Bulbs that have done flowering, may be taken out of the pots, and stored in a dry place.

Greenhouse.—This will look bare, if all the plants are taken out, as was formerly the custom. This stripping of the house is needless, as a perpetual show of flowers may be enjoyed, if a little care is exercised in the selection of varieties; besides there are many plants which do not grow well in the open ground, but which do well under glass. Do not omit the weekly smoking of the houses, to kill the green fly and other insects, nor the showering overhead, to kill the red spider. Also admit plenty of air, except during cold storms.

Camellias and *Azaleas* may be taken out of doors, and protected from the sun by a shade of lattice-work. This is much better than allowing them to remain in the greenhouse, where they are injured by too much sun.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending May 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	261,228	817,000	1,623,000	33,000	239,000	561,000
26 d's *last* m'th	242,700	601,200	1,782,000	9,000	207,000	529,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	356,000	1,921,000	2,709,000	64,500	138,000	1,814,000
26 d's *last* m'th	397,000	2,910,000	2,686,000	61,000	315,000	1,763,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875..	254,228	817,000	1,623,000	33,000	239,000	561,000
25 days 1874..	299,000	2,519,000	2,167,000	24,600	49,000	611,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	356,000	1,921,000	2,709,000	61,500	138,000	1,814,000
25 days 1874..	291,000	2,306,000	2,634,000	47,000	317,000	1,609,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
May 11, 1875..	969,801	1,342,924	16,124	16,737	547,209	229,657
Apr. 9, 1875..	1,701,029	2,391,967	27,531	101,961	786,260	194,771
Jan. 11, 1875..	3,675,122	1,019,960	50,889	191,170	877,014	115,617
Dec. 7, 1874 .	4,513,396	1,220,973	15,925	168,391	890,899	135,622
Nov. 9, 1874..	3,680,111	1,727,510	19,123	117,185	791,722	135,882
May 11, 1874..	225,331	34,003	25,839	49,125	53,527	40,939

4. *Exports from New York, Jan. 1 to May 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1875..	633,236	5,535,389	4,176,173	47,415	165	38,122	175,663
1874..	782,059	9,309,705	5,515,551	352,373	——	45,113	158,947
1873..	392,997	1,485,326	3,965,351	49,700	11,830	10,604	24,152
1872..	——	286,732	2,380,246	4,425,213	208,000	9,300	12,388
1871..	——	659,952	3,499,708	1,600,576	17,338	67,903	13,777
1870..	——	633,515	4,003,651	119,022	6,709	——	1,089
1869..	——	337,389	2,645,850	1,173,235	——	——	39,583
1868..	——	319,202	1,708,175	2,909,014	153,093	——	36,169

CURRENT WHOLESALE PRICES.

	April 13.	May 13.
PRICE OF GOLD	115 3-8	115 1-2
FLOUR—Super to Extra State	$4 60 @ 6 00	$4 85 @ 6 10
Super to Extra Southern	4 60 @ 8 00	5 00 @ 8 50
Extra Western	5 00 @ 8 25	5 20 @ 8 50
Extra Genesee	5 40 @ 6 75	5 50 @ 7 25
Superfine Western	4 60 @ 5 00	4 85 @ 5 20
RYE FLOUR	4 25 @ 5 25	4 35 @ 5 50
CORN-MEAL	3 90 @ 4 80	4 00 @ 4 80
WHEAT—All kinds of White	1 30 @ 1 42½	1 40 @ 1 47½
All kinds of Red and Amber	1 15 @ 1 32½	1 15 @ 1 43
CORN—Yellow	94 @ 96	89 @ 90
Mixed	93 @ 95	87½ @ 92½
White	94 @ 96	89 @ 90
OATS—Western	72 @ 77	75 @ 78½
State	73 @ 77	75 @ 78½
RYE	95 @ 1 07	1 00 @ 1 09
BARLEY	1 15 @ 1 50	1 25 @ 1 55
HAY—Bale, ℔ 100 lbs	65 @ 1 05	60 @ 1 10
STRAW, ℔ 100 lbs	50 @ 85	45 @ 80
COTTON—Middlings, ℔ lb	16⅝ @ 17	16⅜ @ 16½
HOPS—Crop of 1874, ℔ lb	28 @ 45	28 @ 45
FEATHERS—Live Geese, ℔ lb	33 @ 55	33 @ 60
SEED—Clover, ℔ lb	11¼ @ 11¾	11½ @ 12¼
Timothy, ℔ bushel	2 55 @ 2 85	2 55 @ 2 75
Flax, ℔ bushel	2 10 @ 2 35	2 00 @ 2 20
SUGAR—Refi'g & Grocery ℔ lb	7 @ 9¼	7¼ @ 9½
MOLASSES, Cuba, ℔ gal.	40 @ 45	37 @ 46
New Orleans, ℔ gal	65 @ 77½	70 @ 76
COFFEE—Rio (Gold)	15¾ @ 18¾	16 @ 19
TOBACCO, Kentucky, &c., ℔ lb.	10 @ 28	10 @ 28
Seed Leaf, ℔ lb	7 @ 55	7 @ 55
WOOL—Domestic Fleece, ℔ lb	30 @ 64	28 @ 62½
Domestic, pulled, ℔ lb	30 @ 50	25 @ 50
California, clip	15 @ 34	15 @ 33
TALLOW, ℔ lb	8½ @ 8¾	8¾ @ 9⅛
OIL-CAKE—℔ ton	45 00 @ 47 50	44 50 @ 48 50
PORK—Mess, ℔ barrel	22 25 @ — —	21 90 @ 22 15
Prime Mess, ℔ barrel	19 75 @ 20 00	19 70 @ 19 75
BEEF—Plain mess	10 50 @ — —	10 00 @ —
LARD, in trcs. & barrels, ℔ lb	15 @ 15¾	14¾ @ 15¾
BUTTER—State, ℔ lb	15 @ 30	15 @ 30
Western, ℔ lb	12 @ 25	12 @ 24
CHEESE	5 @ 16¾	4 @ 15½
BEANS—℔ bushel	1 50 @ 3 00	1 50 @ 3 10
PEAS—Canada, free, ℔ bu	1 15 @ — —	1 19 @ —
EGGS—Fresh, ℔ dozen	25 @ 26	15½ @ 17
POULTRY—Fowls	15 @ 24	16 @ 26
Turkeys—℔ lb	16 @ 22	17 @ 23
Geese, ℔ pair	1 25 @ 2 00	1 00 @ 2 25
Ducks, ℔ pair	70 @ 1 12	75 @ 1 00
PIGEONS, ℔ pair	75 @ 1 00	1 00 @ 1 75
WILD DUCKS, ℔ pair	50 @ 1 25	— @ —
PLOVER, ℔ dozen	— @ —	1 25 @ 1 37
SNIPE, per dozen	— @ —	30 @ 1 37
TURNIPS ℔ bbl	1 25 @ 1 75	1 75 @ 2 00
CABBAGES—℔ 100	5 00 @ 11 00	— @ —
ONIONS—℔ bbl	1 75 @ 4 00	50 @ 1 00
ONIONS, new Bermuda, crate	— @ —	1 00 @ 1 25
POTATOES—℔ bbl	1 62½ @ 2 50	2 00 @ 2 75
SWEET POTATOES—℔ bbl	3 00 @ 3 75	3 00 @ 4 00
BROOM-CORN	10 @ 16	9 @ 15
POTATOES, new Bermuda, bbl	— @ —	7 50 @ -
ASPARAGUS, ℔ doz. bunches	— @ —	2 00 @ 5 00
RADISHES, ℔ 100 bunches	— @ —	1 00 @ —
STRAWBERRIES, ℔ quart	— @ —	25 @ 40
APPLES—℔ barrel	75 @ 2 00	1 00 @ 2 50
CRANBERRIES—℔ bbl	2 25 @ 9 50	— @ —
GREEN PEAS, ℔ bushel	2 20 @ 2 50	— @ —
GREEN PEAS, ℔ crate	6 00 @ —	2 25 @ 2 75
TOMATOES, ℔ crate	2 50 @ —	80 @ 1 00
SPINACH, ℔ bbl	— @ —	4 00 @ 4 70
KALE, ℔ bbl	— @ —	2 00 @ —

Gold has been up to 116, and down to 114¾, closing May 12th at 115½, as against 115⅜ on April 12th.....The offerings of most kinds of Breadstuffs, afloat and from store, have been much lighter, and higher prices have been claimed, especially in view of the unfavorable weather, and the reports of injuries by the severe and unseasonable cold to the crop of winter wheat. The demand, however, has not been remarkably active, either for home use or shipment, at the ruling figures, though the export movement has been favored by unusual depression in ocean freights. Toward the close, Wheat was pressed for sale, and quoted lower, influenced, in part, by more liberal offerings of Spring, for June arrivals. Considerable quantities of Canada Club Wheat, in bond, to arrive on the opening of canal navigation, have been also offered within the week ending with May 13th, for which the nominal asking price was $1.30 per bushel, but lower rates would be accepted. It was found difficult, however, to elicit bids from export buyers, as these operators were apprehensive of an adverse turn in ocean freights. Corn, Rye, and Oats closed with more firmness, in view of the reduced supplies available. Rye was particularly scarce and wanted for shipment to the Continent, as well as for milling. Prime Oats were offered very sparingly, and some speculative demand was noted....Provisions have been less active, opening more firmly, but closing generally cheaper. Butter left off rather more steadily, with prime to strictly choice makes in limited stock. Cheese was unusually depressed, and difficult to place, in any considerable amounts. Eggs declined materially....Cotton has been very freely dealt in, especially on speculative account, but at reduced quotations....Tobacco has been in fair request at essentially unchanged rates....Hops have been quiet, but held with firmness....Seeds have been dull and weak....Hay and Straw have been rather more sought after at quoted rates....Petroleum and Naval Stores have been depressed and quoted cheaper, on slow movements....Wool has been in comparatively moderate demand, but without important alteration as to values. The inquiry for manufacturing purposes has been quite limited. Supplies have been offering with comparative freedom, in most instances, at late rates. Buyers have not been disposed to operate to any considerable extent in the local market, pending the receipt of more liberal amounts of new clip. From the interior there have been very few advices received thus far, indicative of the probable opening figures for the new clip; but the experiences of the past season would seem to lead to the opinion on the part of buyers that it will not be advantageous to operate at prices any higher than those of last year, and even at those rates that the new clip is not likely to pass freely into consumption, in view of the extreme dullness of the market for domestic woolens. On the other hand, producers are not eager to accept bids short of asking figures, which are represented as ruling generally somewhat above the opening quotations of last year. Some sales of fleece wool, on sheep's back, have been reported in the interior @ 50c. per lb. for combing stock.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
April 19	8,693	77	2,270	19,669	30,606	61,315
April 26	10,269	183	3,371	24,743	35,427	73,996
May 3	8,575	73	3,361	13,900	25,612	51,524
May 10	9,411	90	3,000	17,543	32,883	62,927
Total for 4 Weeks.	36,948	423	12,003	75,855	124,528	249,762
do. *for prev. 4 Weeks*	32,159	509	4,635	72,568	95,803	205,674
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	9,237	106	3,002	18,964	31,132	
do. do. *last Month*	8,010	127	1,159	18,142	23,950	
do. do. *prev's Month*	7,185	100	619	21,852	26,051	

Beeves.—The months' business opened with an advance of ½c. ℔ lb., on a brisk market. The hopeful feeling was soon lost, and large receipts altered the tone of the market considerably. Losses of $5 @ $6 ℔ head, were made on most of the stock, except extra, which remained firm. Dealers who lost no more than $50 a car load, were well pleased, and a poor market was the rule to the end. At the close the market was dull, with a strong downward tendency, and sales were made at a loss on western stock. A few selections went at 13¼ @ 13½c. ℔ lb., to dress 58 lbs. to the cwt.; common to prime natives sold at 10 @ 12½c. ℔ lb., to dress 56 to 58 lbs. Rough oxen brought 9½c., to dress 55 lbs., and fat bulls sold for 5c. ℔ lb. live weight. A reduction in the cost of western stock, is the only hope for dealers here, as prices can not be advanced in this market. A year ago extra cattle were sold here at 12¼ @ 12½c. ℔ lb., on 58 lbs. to the gross cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
April 19	10 @ 14 c.	11¼ @ 11⅝c.	11½c.
April 26	9¾ @ 13⅜c.	11 @ 11⅝c.	11¼c.
May 3	9½ @ 13½c.	10¾ @ 11½c.	11 c.
May 10	9½ @ 13½c.	10½ @ 11½c.	11 c.

Milch Cows.—Cows have been dull of sale through all of the past month. Prices have not been maintained, and quotations are reduced to $40 to $70 for common to good cows, with slow sales at these figures....**Calves.**—For this class of stock the market has been easy, with a gradual weakening at the close, and prices gave way fully ½c. ℔ lb. The range at the close was 5 @ 9c. ℔ lb. for poor to prime veals....**Sheep and Lambs.**—The market for sheep closes dull, with prices falling. Ordinary to extra clipped sheep, sold for 5 @ 6½c. ℔ lb. No good wooled sheep were offered. Spring lambs were quoted at 10 @ 13c. ℔ lb....**Swine.**—There has been a good demand for hogs, and prices have generally ruled steady. As we close, there are no live hogs on sale, and city dressed are very firm at 9⅞ @ 10c. ℔ lb.

The following statement, taken form a report made by Sidney D. Maxwell, Supt. of the Chamber of Commerce of Cincinnati, and kindly furnished us by that gentleman, gives the quantity of pork, barreled and in bulk, and lard, in stock in that city on the 1st of May, 1875, compared with the stocks on hand the same day last year. We give totals, and omit details:

Winter Packing, Nov. 1st to March 1st.	**1875.**	**1874.**
Pork in barrels	26,724	10,075
Bulk meats (shoulders and sides), lbs	27,108,017	33,522,865
Bacon (shoulders and sides), lbs	1,256,197	2,296,985
Hams, sugar-cured and pickled, lbs	11,787,738	9,745,985
Total, bulk meats, bacon, and hams, lbs	40,151,952	45,565,835
Decrease in 1875, lbs	5,413,883	
Lard in tierces	22,294	6,607
Lard in bbls. and kegs	3,404	2,602

Effect of Feed.—"W. S.," Ogle Co., Ill. Food of a proper character and in sufficient quantity, is not alone sufficient to produce abundant milk. Milking properties come chiefly by inheritance, and although milk can not be produced without food, yet there must be a natural capability in the animal, to change this food into milk. There are good and poor cows, and feed will not at once make a good cow out of a poor one. But if a poor cow is fed well and her calves are raised well from their birth, the character of her descendents may be greatly improved in a few generations. The improvement is increased by selecting a bull from a good cow, and also by selecting the best of the calves to breed from. If this course was generally taken by farmers and dairymen, it would require but a few years to largely increase if not double the value of our common native cows.

Last Call.

Last Chance,

BUT A

Grand One,

Ending June 30, 1875,
At 6 O'clock, P. M.

FOR THE

Old and New.

The Publishers have offered a variety of Splendid, A No. 1 articles **free** to those sending in clubs of subscribers for the *American Agriculturist*, of *Three* names or more. Over

15,000 Persons

have secured these Premiums, and in **499** cases of every **500**, with great satisfaction.

Many more have clubs partly made up. They should be promptly filled out **now**, as the Premium Offers only extend to the end of June.

10,000 NEW CLUBS

Can be started and easily made up during June.

There are many fine things in our Premium List, and you can get one or more of them **without money**, and with only a few minutes time. See part of them in the next column, and in the Illustrated Descriptions on the sheet you have already, or if you have not a copy, one will be sent free on application.

LARGE PAY

FOR

LITTLE WORK

Is not this Journal, with all its Illustrations, its variety of reading, its large size, and low price, well worth all its cost?

If it is, explain this to a few friends and neighbors, and offer to send on their names as subscribers. It will cost you but a little effort, *while for every three names or more*, the Publishers will present you with a valuable article worth having, as named below. **Extra.** ☞ Besides your Premiums, every subscriber can also have a Fine *Premium Picture*, offered on p. 211.

AS A

Constant Business,

Many persons collect five to twenty-five names a day, receive our Premiums, and sell them. But in all June, **YOU, READER,** can get three, five, ten, twenty, or more names, and receive a nice Premium, as named below.

☞ We will present to you, **free,** for sending

Only **3 Subscribers,**

($1.60 each, a year, post-paid.)

A **Pocket Tool Holder;** or **Apple Parer;** or **Cherry Stoner;** or **Crandall's Acrobats;** or **Indelible Ink** with **Pen,** etc. etc., (each worth $1 to $1.50).

For only **4 Subscribers,**

Fine **Pocket Knife;** or **Bracket Saw;** or **Patent Revolving Pencil,** etc.

For only **7 Subscribers,**

Excelsior Pocket Microscope; or **Child's Silver-plated Cup,** etc.

For only **8 Subscribers,**

That Splendid **Multum in Parvo Pocket Knife** (a pocket lot of tools weighing only 2 ounces); or first-rate **Gold Pen,** etc.

For only **10 Subscribers,**

Fine **Carver and Fork;** or French Cook's **Knife, Fork and Steel.**

For only **12 Subscribers,**

Doll's **Cottage Chamber Set;** or **Child's Silver-plated Knife, Fork** and **Spoon.**

For only **15 Subscribers,**

One dozen **Silver-plated Teaspoons;** or Ladies' **Elegant Gold Pen** in Rubber case, etc.

For only **18 Subscribers,**

A $10 **Library** for the Farmer's Home. Your choice from our list; and for an increased number of subscribers your library can be proportionately increased. (See Premium List).

In addition to the few articles enumerated above, many others are offered in our Premium List, as Elegant Silver-plated Tea Set; Ice Pitcher; Cake Basket; Knitting Machine; Sewing Machines; Breech Loading Pocket Rifle; Double-barreled Gun; Watches; Piano; Melodeon, etc. etc. Any of these valuable and useful articles, can readily be obtained by any one who will put forth a little well directed effort, during this pleasant month of June. Send and get, free, (if you do not already have it), our Illustrated Premium List.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our National BAZAAR this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look all through the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thought in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

Origin of Indian Corn.—The Maryland Academy of Science, in its Proceedings for March 15, published in the Tribune, mentions "a letter read from Prof. Gray, stating that there was no reason to suppose that Indian Corn is native or indigenous to North America." Now, on the contrary, Prof. Gray supposes that maize did most probably originate in North America, and he can hardly have written any thing to the contrary. What he did write, in answer to an inquiry whether he had ever seen or knew of any indigenous Indian Corn, or had any sufficient evidence of its growing truly wild, (not as an escape from cultivation), doubtless was, that no really wild corn was known. But the case is much the same with wheat in the old world—to which it belongs, no doubt, although it has never been found in an indigenous state. A. G.

"Torsion" Wagon Springs.—In the *American Agriculturist* for December last, a wagon seat or spring was illustrated, which is made upon the "torsion" principle, the General Agents being Messrs. Schenck & Sheridan, of Fulton, N. Y. The business of this concern has so largely increased, that we understand they have opened a branch establishment at Chicago, under the firm of Schenck, Sheridan & Moffatt.

The Buffalo Gnat.—"H. S." We shall have an illustrated account of this insect, which has destroyed so many horses, next month. It was not practicable to procure the engravings for this issue. There are probably several different species popularly known as Buffalo Gnat, all closely related to the European *Simulium molestum.*

Did It Pay?—Thirty-three years ago two farmers settled side by side, with about equal advantages as to soil, markets, etc. One of them subscribed for the *American Agriculturist*, and occasionally bought a book or two about his business, the whole costing him only $6 a year. His boys read and *thought* about their work, became interested in and *respected* it, and were happy in their toil, because they had something to think about. They grew up intelligent, and settled as good prosperous farmers, respected and influential....The other farmer "couldn't afford papers and books"; (he could afford 6 cents a day, or $20 a year, for tobacco, beer, etc.) His boys worked sullenly by day, and "skylarked" at night; they despised and hated their work, which for them was only exercising brute force, with little mind applied. When old enough to escape parental restraint, they quit the farm, one for this, and another for that, and *none* of them ever amounted to anything. Six dollars a year, or even $1.50 a year, would have made a wonderful difference—would have changed their whole course of life. Would it have paid?... Please show this item to some of your neighbors, who have perhaps not thought of this matter, and invite them to try this or some other good journal for the present year. You may do them a positive good by such a hint.

N. Y. and New Haven Steamers.—Multitudes of people have occasion to come from New England to New York City via New Haven. Those coming by the evening express train, arrive after 11 o'clock, dusty and travel-worn, and it is after midnight before they can get to repose in a hotel. By stepping off at the New Haven Depot, and taking the horse-cars to the palatial steamer C. H. Northam, they will find spacious and home-like saloons, a first-rate bed in a fine state-room, and after a good night's rest, land in the city in time to take breakfast, and be all ready for business at its open-

ing, or for pursuing their journey westward or southward. The fare is only $1.25, including sleeping-berth, or $1 extra for a stateroom for one or two persons, while $2 is saved in car-fare, and as much more in hotel and carriage expense in the city. One can also remain in the city until 11 P. M., have a night-ride and sleep on the fine steamer Continental, and leave New Haven by an early morning-train. It is thus practicable for those living 30 to 60 miles beyond New Haven, to leave home after tea, lose no day-time in coming and going, and have the whole day in New York from 7 A. M. to 10 P. M.

The Ames Plow Company.—This old establishment does not, as one might suppose from its name, by any means confine itself to the manufacture of plows. It is largely engaged in the production of haying implements, especially Burt's Horse Hay Rake, and the American Hay Tedder. These implements enable the farmer to work his hay rapidly, but at such a slight cost that the expenses of the hay crop are materially reduced, and he is rendered almost independent of the weather.

Cranberry Culture.—"J. F. Z.," Minn. If you propose to try to grow cranberries, the best investment you can make is $1.25 in "White's Cranberry Culturist," published by the Orange Judd Company—which is full and practical—indeed a book that one who wishes to undertake cranberry culture cannot afford to do without.

Horticultural Prizes.—The Mass. Horticultural Society, which is always doing something for the benefit of the cause, offers Special Prizes for Essays upon various horticultural subjects—that on Roses is to be decided early this month, but later there come three chances—all open to general competition. Twenty-five dollars each is offered for the best Essay upon Grape Culture in gardens and on buildings, with a list of varieties best adapted to such purposes; the essay to be read on Saturday, Oct. 9....For the best Essay upon the Culture of the Cauliflower and other vegetables of the Cabbage family, (*Brassica oleracea*); the essay to be read on Saturday, November 6....For the best Essay upon the Principles of Landscape Gardening as applied to small suburban estates; the essay to be read on Saturday, November 27....The Essays must be submitted at least one month before the day of reading, and the name of the writer sent in a sealed envelope. For next year we would suggest a botanical subject: what is the "cabbage *family*"—and so near Cambridge too.

Central Park.—It has been a subject of general remark among persons of taste, especially those who have seen what is done in public parks abroad, that ornamental planting of flowers, and sub-tropical gardening are almost entirely neglected in our much praised Central Park. This neglect is likely to be still more marked. The latest act of the politicians who now control matters, is to abolish the office of Landscape Gardener altogether, and thus remove Mr. Robert Demcker, the gardener, to whom the public have been indebted for what little gardening has been done during the past few years—and accomplished too in the face of great obstacles. The removal is claimed to be in the interest of economy; it is that kind of economy we often see in political affairs; he is removed, and three others engaged to do his work. We hope Mr. D. may soon find a position where his accomplishments will be better appreciated, than they were by the political gentlemen who now mismanage the park.

When to Cut Hay.—Valuable practical hints on this topic, will be found in Prof. Atwater's article, on page 213. The reader should become familiar with the principles there enunciated. Some careful re-reading of the previous chapters of these articles, may be useful to those who have not thoroughly mastered them as they have appeared.

Condition of Winter Wheat.—The returns from 300 principal winter wheat growing counties in the United States, to the Agricultural Department at Washington indicate that the damage by unfavorable weather the past winter, has reduced the average condition of the crop 37 per cent. Unless favorable weather occurs, not more than five-eighths of a full crop will be harvested. It is estimated that over one million acres have been replanted. The most extensive damage has occurred in Missouri and Illinois, and the least in Kansas.

Potato Bugs.—A daily paper says: "As a sensible safeguard against the introduction within her borders of the Colorado potato-beetle, Germany has furnished illustrated descriptions of the insect to all vessels plying between that country and American ports, and passengers and sailors are earnestly besought to destroy any stray specimen they may detect."—Good, *semper paratus!* And let them not be particular about the likeness or the stripe of the bug, but, whether they are like the illustrated descriptions or not, smash them all flat, and the *flat* ones flatter; and very thankful will all sea-goers be to "Germany."

Immigration to Mexico.—"Geo. M. W.," Plainfield, N. J. We should not advise any person to emigrate to Mexico, whatever inducements may be offered by that government to attract persons thither. Is there not room and variety enough at home from Maine to Florida, and from Oregon to California? Besides, it is unsafe to believe the reports of appropriations made by Mexico for the benefit of immigrants, and more unsafe to depend upon them. We have had a rather extended experience with Mexicans, and would not live there if the whole country were given us, provided we had to take the people too.

Product of one Rose-bush. — Mr. Thos. Broderick, gardener for Jas. D. Smith, Esq., Stamford, Conn., sends an account of the daily yield of a Lamarque rose during the month of April. The bush is five years old, and is planted out in the ground of the greenhouse. The number of roses cut ranged from 20 to 200 daily, making for the whole month a total of 2,012.

Fistula in a Horse.—"J. D. A.," North Stonington, Conn. Fistula is generally the result of a bruise of the shoulder or withers, which forms a running sore with several pipes or sinuses, pointing in different directions, from the walls of which pus is secreted. The remedy is to destroy these pipes and remove them, and produce an open wound which must be healed from the bottom. The treatment is to inject with a syringe, half a teaspoonful of tincture of iodine once a day, for a few days, until the pipes are destroyed and sloughed away. The sore is then kept open by a plug of lint smeared with simple ointment, until it heals from the bottom. A little compound tincture of benzoin, injected occasionally, will assist the healing.

Plant Named.—"Amelia E. F.," Md. The common Bloodroot, *Sanguinaria Canadensis*. Though the flower is of short duration, this is worth transferring to the garden on account of its earliness.

Keeping Soft Soap.—"P. A. V.," Flanderm, D. T. Soft soap can be kept very well in a pine or oaken barrel. A fish or pork barrel will answer, the salt in the wood will not hurt the soap. A kerosene oil barrel will give a strong smell to the soap, which will make it disagreeable for some purposes, but will not injure it for use.

Hardiness of Silver Thorn.—Steele Bros., Ind. The Eleagnus has endured the winter on our grounds, a little north of New York, not only last winter, but during the much more destructive winter of 1872-'73.

To Ring a Bull.—"G. K. M.," Bucks Co., Pa. A bull should be ringed when a year old; earlier, if he shows any turbulence or vice, but never later.

Some Questions as to Sheep.—"K.," Delaware. No one should attempt to keep more sheep than can be well fed and housed. Three pounds of hay, and one pound of bran or meal per day, is a fair average allowance per head. It is not profitable to purchase wethers for feeding; ewes only should be kept, as the lambs are the profit, the wool and increase in weight going to pay expenses. Ewes may be bought in the fall, and if well fed, may be sold fat after rearing a lamb, within a year, and pay 100 per cent profit on their cost. Pure Merino ewes can not be bought for $3 a head. Common grades with some Merino blood, are worth that price. These sheep, however, with a pure Cotswold ram, will produce first-rate market lambs, or good sheep for wool or breeding. Corn fodder and straw are poor feed for sheep. The wool is rich in nitrogen and potash, and food that will furnish these is absolutely necessary. Clover hay, bran, corn, oats, rye, and buckwheat, are appropriate food. Some straw may be given occasionally to pick over, and some roots will be useful with the dry feed, as a corrective. But sheep may be kept successfully without roots, if given other food of a laxative character. Cotton seed or linseed oilcake meal is useful.

Insects on Flowers.—"Flora," Green Co., O. The black beetle which troubles your Asters and other flowers, is, to judge from your description, *Lytta atrata*, or some closely related species. The only remedy we know is hand-picking and killing them.

Profit in Poultry.—"E. W. A.," Rogersville, East Tennessee. Poultry-keeping is not profitable, unless followed with great perseverance, skill, and experience—nor even then, if there is not a good market near by for eggs and fowls. Grass fields are necessary for a range, unless fancy fowls are kept, and eggs or birds are sold at high prices. A considerable portion of the profit of fancy poultry keepers is from premiums at poultry shows, and to succeed as an exhibitor or breeder of fancy poultry, one must have long experience, tact, taste, and skill, and an established reputation. A young man, who knows nothing of poultry-keeping, would be almost sure to lose his money, by going into the business. Where fowls can be kept on a farm at little or no expense, there they are profitable, but rarely elsewhere.

Machine to Sow and Cultivate Turnips.—"R. D.," Winnebago, Ill. Allen's Planet Seed Drill and Hoe Combined, sows turnips or any other small seeds, and by making the necessary changes, cultivates and hoes the rows. It is made by S. L. Allen & Co., 119 South Fourth St., Philadelphia. It is a light machine, and can be used by a woman in the garden, or a boy or man in the field.

SUNDRY HUMBUGS.—Many persons who are victimized by swindlers, or have attempts made upon them, think they have done their whole duty in the matter if they report the case to us. We have no power to suppress humbugs, except that which accompanies our ability to expose them; and there are many cases in which exposure does but little good. As an illustration of this: we not long ago received a note stating that three licensed venders—giving their numbers—were selling from their carts a few blocks below our office. The writer stated that he had examined their measures, and found all had false bottoms; one tin quart measure having two bottoms over an inch apart. This gentlemen writes us a note asking us to expose the swindle under "Sundry Humbugs" and then to completely throw the matter upon our shoulders, *omits to sign his name.* This gentleman's duty in the case was very plain; he should have bought a quart of what the vender was selling, as evidence that the measure had been used, and then called upon the nearest policeman to make the arrest, and should then have gone with him as witness. Our exposure of a street-vender, who is here to-day and there to-morrow, a month after the occurrence, would do no good whatever, while one single arrest would carry consternation to the whole crew. It is the same with many other cases we are called upon to expose. There is a live-stock concern in Pennsylvania about which we have almost weekly complaints, which are apparently getting considerable sums of money without making any returns. We have no proof of this, other than the assurance of a number of persons in different parts of the country, but which is really no *legal* proof. If facts are as stated, about this Pennsylvania concern, why do not those who have lost their money take legal steps to recover? Writing to us will not get the money back, nor can we publish the concern as swindlers unless we have the proofs which will convince twelve men that we were right in doing so. Law-suits are a natural consequence of our course in exposing humbugs, and the expense of time and money in defending suits where we have abundant proof of the accuracy of our statements, give us all the amusement of that kind we care for, and we do not propose in any case to be called into court without being able to fully substantiate our assertions. We have done in the past, as we expect to do in the future, our full share in exposing swindlers, and this with no other object than to protect the public, and we think we have a right to ask that those who have the opportunity, should help in the work. But to return to this matter of

FALSE WEIGHTS AND MEASURES,

the loss to the community from this source is much greater than is supposed. Aside from the cases of intentional fraud, there is much inaccuracy in the scales and weights of presumably honest dealers. We cannot here point out the inaccuracies that may occur with an honest dealer. Spring-balances are always to be looked at with suspicion; at best they are liable to vary, and a dishonest vender can make them tell heavily against the purchaser. The only safeguard against intentional and accidental short weight is to have a pair of accurate scales or a well-tested balance of some kind, and weigh every article that comes home.

CATCHING VAIN PREACHERS.

There is a new dodge reported by a Virginia correspondent. The Rev. So-and-So is a good man who has been quietly discharging his duties in some obscure town in Virginia, without thought of anything beyond his own proper work. He gets a letter from a person in N. Y. He knows no one in that city, and wondering, opens the letter; he finds it dated No. 000 5th Avenue; he has heard of that as the place where the "nabobs" live; great is his astonishment to find that it is a gratuitous letter from Mr. Whats-his-name, praising a beautiful extract from one of his sermons. Oh! this was a lovely sermon, it did Whats-his-name so much good; he only paid $2 for the "Rambuleer" published by Art & Co.,

N. Y., and he holds that volume as the priceless gem of his extensive library. Is not Parson "So-and-So" mortal? is he not too guileless to see the bait? He sends the $2, which can be poorly spared—but it will be such a surprise and pleasure to his wife to see one of his sermons in print—printed in New York, too. He says nothing to the wife, but sends the $2 to Art & Co. He awaits the arrival of the book by mail—and at last accounts was still waiting.

THE MINING FEVER

is now prevailing in eastern Massachusetts, and the reported success of some mines has caused great excitement throughout Essex and adjoining counties. Already very suspicious-looking persons are prowling around farms, and proposing to pay large prices for the property on a provisional purchase, the farmer signing a bond to sell at the end of two years if valuable metals are found on the place. All the advice we can give is to be careful how you sign anything affecting your property. No doubt these bonds, perhaps in an obscure manner, convey the right of exploration, and the unfortunate signer may find excavations made in his best fields, or even in his front yard in the "exploration" for silver and gold. Be cautious....Complaints are now and then made of

BOGUS CANVASSERS,

who come around and get subscriptions for papers which have no existence. It would occur to most persons to ask to see a copy of the paper to which their subscriptions are solicited. The people of Wilkesbarre, Pa., have been victimized by paying money for a paper said to be published in New York, which, and its alleged publishers, is not to be found.

TELEGRAPH INSTITUTES.

We have received so many complaints of these concerns that there must be something rotten in those at some western points. A correspondent at Harper's Ferry, Iowa, complains of being swindled himself by one of these in Wisconsin, and states that many young men, including cripples, who go there, get "beaten out of" their hard-earned money, and asks us to warn people against such Institutes. That there are "Telegraphic Institutes" and "Commercial Colleges" which promise much more than they can perform, seems very probable, but unless our friend can give us something more definite, we cannot warn people against the particular "Institute" of which he complains.

LOTTERIES

for the present seem chiefly confined to Texas. It is to be regretted that this magnificent state, with such wonderful capabilities, and which within a few years has made such cheering progress, should harbor these enterprises. There are several of them in full blast, one of which "The Texas Mutual Benefit Association" has a truly ingenious plan for getting rid of its tickets. It sends a person five tickets with a circular stating that the price is $2, but if the one who receives them does not wish to go $2 on the chances, he is advised to sell four of the tickets at 50 cents each, and keep the other for his trouble, and this one ticket *may* draw the capital prize of $25,000—and then again it may not, no knowing what may happen. The Texans talk about Yankee 'cuteness, but this beats anything we have known a Yankee to do. The name of the "secretary" is Choate Somerby, which printed in fac-similie, looks at first sight most unfortunately like "Cheat Somebody," as one of our correspondents suggests. The business of selling

COUNTERFEIT MONEY,

or rather of pretending to do so, (for as we have before explained there is no counterfeit money in the transaction, all the machinery being for getting a hold on some unfortunate victim), seems to have revived a little as spring opens. It would be amusing to us, who have circulars of these chaps by the bushel, to see the surprise of those to whom such a matter is entirely new, did we not see that their indignation at being made the recipient of a proposition to engage in dealing in "queer" was perfectly honest. One gentleman in South Carolina is careful to send the envelope the circular came in, so that we may "ferret out the scoundrel if possible." "Ferret out"—why bless your honest soul, we have on the table several other copies of the self-same circular, printed on the very same paper, with the same type, each of which has a different name attached to it, and were we to go among our "archives" we could no doubt produce the identical thing with from 25 to 50 different names. ..We thank Henry Woodward for offering a little variety in this line. Most of these fellows offer a printed circular, and poorly printed too, or else a lithographed one, but Henry's circular is written, and neatly too to be in keeping with its style. Henry is not one of these vulgar fellows that talk about "counterfeit money," oh no, he has only "goods," and they are of the "finest quality" which is a great improvement over the old style of circular....These so-called

PURCHASING AGENCIES

are a nuisance. We say "so-called," because there are in New York, and perhaps other cities, respectable persons doing a legitimate business as purchasing agents, but we refer to those chaps in obscure towns whose catalogues and circulars give no names. They offer traps and trinkets of various kinds, but often their real end and object is to introduce improper and foolish books.... John M. Haven, of Mich., though only 16, is too old a bird to be caught with such chaff as that sent out by the "Union Purchasing Agency." Master H. has no need of a book that teaches "How to make a girl fall in love with you," or "how to bet and always win."....In the medical line there is unusual dullness; the old things seem to be very quiet and new ones are rare.

THE DODGES FOR SECURING AGENTS

for the sale of quack medicines all over the country, are ingenious and amusing. These fellows know that they can by mail reach all the postmasters in the country, without knowing their names. We have before us a circular to postmasters, persuading them to find an agent. The medicine man wants a "local preacher," a man "too feeble to labor" or an "invalid" to act as his agent, and to pay the postmaster for securing such, he will send him "one dollar's worth of the medicines, or I will send you one gross of pens"—take the pens, by all means. Others are more liberal; one chap offers the person who procures an agent 20 per cent on all the money that agent may send in during his first year, and to the agent who will buy half a gross of the stuff, he sends a coat pattern.—Moral. The stuff itself must cost precious little to start with—to allow all these discounts. The expense is, in any case, a matter of bottles and labels, as the filling, as we have shown in the former articles, can be made very cheaply....The "Toll-gate" advertisement still appears in papers which go into respectable families. Those who send for it get a card about the size of an ordinary envelope, with a very poor puzzle picture on one side, and on the other the advertisement of a "Doctor" who will for 10c. send his book on private diseases. Well, this book—which is embellished by a portrait of the author is just a wonder. We thought we had seen the high pressure style of "medical" literature before, but this "takes the rag off" of any quackery that we have seen. Being about matters that we do not care to print here, we cannot show it up as it deserves. This book tells us—about a very simple matter—"no doctor under heaven understands this but myself," and on through the whole little closely printed pamphlet, which is designed to convince any nervous person who reads it that something fearful is the matter with him, and that his only hope is to send to this Buffalo quack who treats patients by the month. Abbey—how can you—after publishing this book, run down your brother quacks of the "Bible House," "Howard Association," "Retired Physicians," and all the rest, as you do on p. 23? There is said to be honor among thieves—are quack doctors without that attribute?....A correspondent in Morgan Co., Ohio, offers us some interesting facts about that "National Surgical Institute." We do not need to go beyond its circular to form an opinion of it.

48 CANCER PLASTERS,

and all on one poor woman! A friend in Morrison, Ill., states that a wonderful cancer quack has been there from Princeton, Ill., who has as sharp a nose for cancers as a pig has for truffles. This fellow took *six* cancers out of one unfortunate woman, and finding so many more, he concluded he must take her home with him in order to finish up the job. He writes to the poor creature's husband that he has "got 48 plasters on her," but that's just nothing, as he has taken out over 80 cancers from one woman, and she lived. We are tempted to say that it is a pity that the "Doctor" did. Is there no power to stay those fiends who prowl about, and by giving some "test medicine" profess to find cancers in any one who is weak enough to believe the wretch? An Italian friend of ours—by the way one of the most tender-hearted of men in his acts, but one of the most violent in speech, considers hanging too good for some crimes, and when he hears of anything particularly atrocious says: "Boil them, boil 'em in oil, over a slow fire." Perhaps this would be unnatural punishment, but this cancer quack should have at least 48 plasters put upon his body, "where they would do the most good."

Patent Fences.—"G. H. S.," Mason Co., Ill. There is no necessity to pay a patent right for the construction of a wire fence with pickets interwoven. There are a sufficient number of fences now in use, and not patented, from which to choose. Unfortunately, however, one does not know to-day if the fence he is building may not be patented to-morrow. Patents are granted for anything and everything of the most trifling character, and the patentees frequently impose upon public journals and get their patents described and published as contrivances in common use. Farmers are thus victimized by thousands, and a regular business is thus carried on. The remedy is for the farmers to help the agricultural press to procure a change in the present loose system of granting patents.

Adorn Your Homes

AT A

Trifling Cost.

We have some Splendid Pictures Printed in 18 Color Shades, That are Beautiful, and Charming.

I—"Up for Repairs."

The sister mending her brother's torn clothes, will be a fine ornament in any house.

II—"Look Out."

A maiden at a cascade in the act of dashing water upon you,—a new and greatly improved edition of this new painting.

III—"Mischief Brewing."

A country boy with a "Jack o' lantern," which he has made out of a pumpkin, and he is telling his little sister of the sport they will have with it by and by, after nightfall.

IV—"The Strawberry Girl,"

One of the most popular pictures brought out in this country or Europe, (size 14 by 20 inches,) of which every home should have a copy.

As long as our supply holds out, we offer a choice of any one of the above four pictures, to every person subscribing for the *American Agriculturist*, who sends, to pay the cost of *mounting, packing*, and *forwarding free* by mail, viz:

For No. I....only 25 cents extra.
For No. II....only 25 cents extra.
For No. III....only 25 cents extra.
For No. IV....only 50 cents extra.
} For mounting, packing, and free delivery.

That is, nothing for the pictures, and only 25 or 50 cents extra for cost of mounting, packing, and paying postage or express. Any one of these pictures is richly worth the *cost* of many subscriptions. They are beautifully printed in Oil Colors, and have the appearance, and indeed the value, of Oil Paintings on canvas.

☞ Name your choice when sending in your subscription.

☞ These Pictures are offered to all subscribers now coming in.

Live Stock at the Centennial.—The Bureau of Agriculture of the International Centennial Exhibition will exhibit Live Stock within the months of Sept. and Oct., 1876, as follows: Horses, mules and asses, (as one class), from Sept. 1st to 15th. Horned Cattle, (of all varieties), from Sept. 20th to Oct. 5th. Sheep, swine and goats, (as one class), from Oct. 10th to 25th. The Bureau is in daily receipt of applications for space, and it is highly important that all who design exhibiting, should now make application, as the preparation necessary must be regulated by the actual demands. Inquiries as to regulations for admission of stock, etc., may be addressed to the Chief of the Bureau of Agriculture, Philadelphia.

Basket Items continued on page 237.

A House Costing $2,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

The plans published in the March *American Agriculturist* have called out considerable correspondence, indicating a general interest in houses of that character and cost. The plans here given are somewhat larger, but can be built for very nearly the same cost....**Elevation,** (figure 1.)—The Front is irregular, having an angle, which narrows the parts, supplies more vertical lines, and adds to their length comparatively. These are important features, imparting a graceful appearance, and influencing the entire character of the house....The angle affords ample room for the Piazza, which can be built for much less cost than when its three sides are exposed.—The next attractive features of the front, are the Bay Windows below, and double windows above, with the Ballustrade, and Hood, so proportioned and arranged, that they conform with each other with pleasing effect.....**Cellar,** (fig. 2.)—The Foundation Walls are of hard bricks laid in mortar, 8 inches thick, and 7 feet high. In localities where the foundation rests on loose sand, care should be taken to provide a bedding, laid 4 inches below the cellar bottom, 16 inches wide, of brick, or better of large flat stones. Still greater care should be bestowed on the bedding for the chimneys and girder supports, for they sustain the greatest proportionate weight, and any settlement of these parts will cause a depression of the floors, disarranging the whole house, and become an immediate and continuous source of anxiety and expense. The Area in the rear is built of hard brick and mortar, with blue-stone steps and coping. Blue-stone Sills are provided for each of the cellar windows....**First Story,** (fig. 3.)—The interior arrangement of the plan will be appreciated as making the best possible use of the room. The Front Hall is wider than is usual in houses of this character. The Stairs are arranged with the "quarter circle" about midway of their hight, which brings the niche down where it becomes an important feature of the hall.—The three principal rooms, the Parlor, Dining Room, and Kitchen, can be entered from the hall. The latter two rooms have doors leading to the lobby. The Lobby is built of 4½-inch tongued and grooved ceiling-boards, with sashes made to swing. A Shelf, 1½ feet high, and another just above the sash, give sufficient framework to fasten the center of the boarding; the ends are nailed to the sill and plate; these shelves will be found useful for many purposes. Attached to the lobby, and built with it, is a good sized Pantry, (*p*,) for the dining room. The kitchen is provided with a Closet at the side of the chimney, a Sink, with small closet underneath, and a direct communication to the cellar stairs under the hall stairs. The window in the side of the dining room may be omitted, if the house is in a village and joins another, but this is desirable to give abundant light in this, which is really the living room of the family.—The method of heating indicated in the plans given for March are applicable to this plan....**Second Story,** (fig. 4.)—The peculiar manner of constructing the Stairs, brings their landing nearly in the center, so that hall space sufficient only for four doors is necessary, leaving almost the entire floor to be laid off into rooms. The heavy lines show the most simple method of dividing this story into four rooms. Should another room be desirable, it can be taken off from two rooms as shown by the dotted lines. In this case another window may be inserted as indicated. Every one's experience is that there cannot be too many closets, and we have added one to every room in the house, except the parlor....**Construction.**—The bill of timber appended indicates a "regular" *Frame.* It is a great satisfaction, and saving, to have the timber properly "laid out," and framed by, and under the immediate direction of a master mechanic, so as to be quickly and substantially raised. Four good carpenters would easily frame all the timber in this house in 2 days, and raise it the next day. At least one man of well known ability and experience as a mechanic should be with and take charge of those employed to build a house. It is not economical for one about to build a *home* to trust such work to the caprice of an inexperienced man, who has "helped" around some job, until he has learned the name of tools, but who has no positive knowledge of the trade, and could not for his life "lay out" the corner post for a two story house, yet is shrewd enough to screen his deficiencies by suggesting "balloon," or something indefinite, that requires little or no skill. It sometimes happens, in localities remote from cities or large towns, that persons are obliged to do with make-shifts, to get a home at all. It was such a condition of things that led the well disposed pioneer of the west to adopt the method called "Balloon framing," which is really no framing at all, and required no skill to get up a kind of home, acceptable under such circumstances. But wherever skilled labor may be had, it is ridiculous to see a gang of intelligent (?) mechanics standing up pieces of diverse lengths, and propping them in a vertical position with rods running every way as braces, not one of which can be removed until the upper ends are secured by ties of some sort. A good frame in a house is equivalent to a good constitution in a man, and is of vital importance; it need not be clumsy, or overloaded, but should at least have the merit of being able to stand alone....**Painting.**—The principal object in Painting should be to protect and preserve the materials used in construction, as also to give a good appearance. All exterior wood-work, though executed with the greatest care and in the most substantial manner, if left exposed to climatic influences is very soon destroyed. It is economy to use only the *best lead* and *linseed oil* in painting exterior wood-work. They will outlast all other compounds, present a better appearance, and in the end furnish a much better foundation for future painting. The difference in cost between the best materials and the imitations, for painting the exterior of a house built on these plans, would not exceed twelve dollars, and the cost of labor would be just the same in either case. The first coat, or "priming" should be put on with the greatest care, so as to thoroughly cover and close all the pores in the exposed surface. All window and outside door frames, corner boards, window caps, water table, and stoop flooring, should be primed *before* setting, especially their edges, where joinings require to be made, as it will be the last opportunity to do justice to these parts, where moisture is liable to collect and remain. When priming is well done, it is best to let the building stand until

Fig. 1.—SUBURBAN RESIDENCE—ELEVATION.

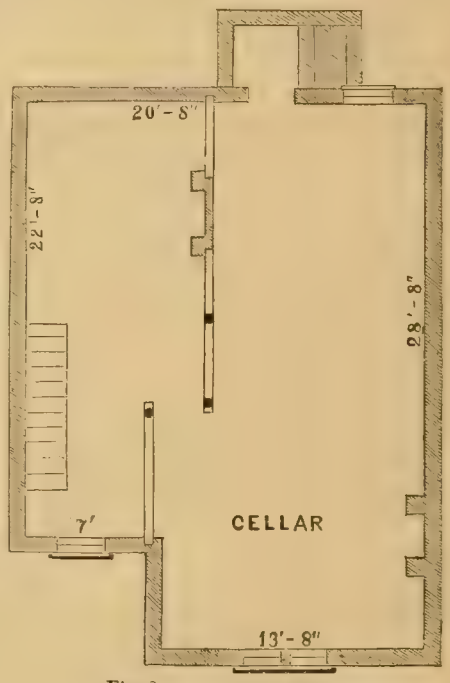


Fig. 2.—PLAN OF CELLAR.

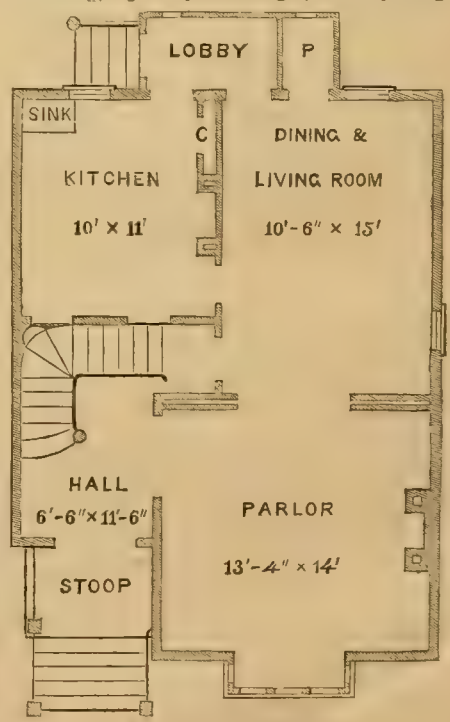


Fig. 3.—PLAN OF FIRST FLOOR.

thoroughly dried, both inside and out, before adding the second coat. It must be evident to any one that much of the water used in the plastering must percolate through and thoroughly saturate every part of a house. Sufficient time should be allowed for this moisture to pass off, and the whole house to become dried out....The nails should then be "set," which will tighten up permanently all the laps in the siding, after which the work should be properly puttied and the second coat applied. Autumn is the best season to paint, after the extreme heat has passed, and insects have disappeared; the process of drying will be slower, and more perfect, with less waste by evaporation, leaving a smooth solid surface. I am often asked "*what color to paint?*" Notwithstanding much has been said against white for outside painting, and the assurance that there are many cases where white would not be suitable, or thought of, yet I believe that for suitability and good taste in nine cases out of ten very light colors, or pure white are indicated. I have known instances where much time has been spent to discover a suitable color for a house, where nearly all the different pigments were drawn from, and after much mixing and testing, the result has generally been an unknown and unnamed shade, as if everything depended on some sentimental "blending with the back ground," or in other words, painting the house out of sight. As a rule

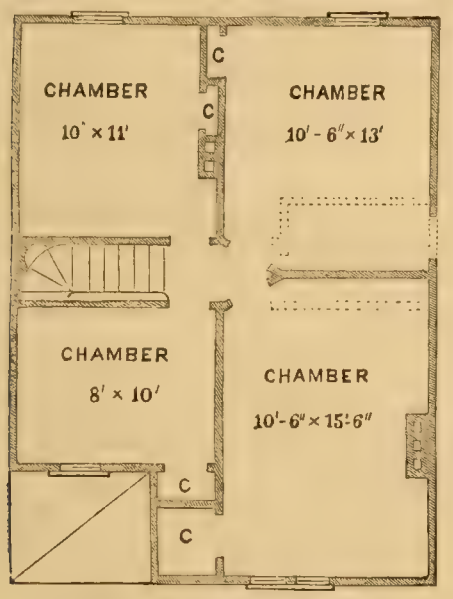


Fig. 4.—PLAN OF SECOND FLOOR.

paint so as to best reveal the true character of the building, and this is best done when the colors afford the foundation for the natural shadows that result from the true and actual projections.

Cost: The following items, prepared with care, embrace the full bill of materials, and labor required in the construction of this house, together with their present cost in the vicinity of New York:

57 yards Excavation, @ 20c. per yard	$11.40
13,000 Brick, furnished and laid, @ $15 ₩ 1000	195.00
500 yards Lath and Plastering, @ 35c. per yard	175.00
28 feet Stone Steps and Coping, @ 40c. per foot	11.20
16 feet Stone Sills, @ 30c. per foot	4 80
2370 feet Timber, @ 2¼c. per foot	53.32
Viz. 2 Sills, 4x7 in. x30 ft. long. 6 Posts, 4x7 in. x30 ft. long.	
2 Sills, 4x7 in. x 22 ft. long. 2 Ties, 4x6 in. x 30 ft. long.	
1 Girt, 4x8 in. x 16 ft. long. 2 Ties, 4x6 in. x 22 ft. long.	
1 Girt, 4x8 in. x 8 ft. long. 2 Plates, 4x6 in. x30 ft. long.	
26 Beams, 3x7 in. x22 ft. long. 2 Plates, 4x6 in. x 22 ft. l'g.	
6 Beams, 3x7 in. x15 ft. long. 6 Pieces, 3x7 in. x 16 ft. l'g.	
400 Wall Studs, 2x4 inches x13 feet long, @ 16c. each	64.00
200 Novelty Siding Boards, 9½ inches, @ 38c. each	76.00
160 pounds Tarred Paper, @ 5c. per lb.	8.00
128 tongued and grooved Flooring, 9½ inches, @35c ea	44.80
110 Hemlock Boards, @ 20c. each	22.00
9½ Squares of Tin Roofing, @ 9c. per foot	85.50
120 feet Cornice, 30c. per foot	36 00
111 feet Gutter and Leader, 10c. per foot	11.10
1 Bay Window with Blinds (complete)	75.00
Materials in Stoop, Lobby, Balcony, Hood, and Corner boards	78 00
8 Windows with Blinds, (complete) @ $16 each	128 00
4 Cellar Windows, (complete), @ $4 each	16.00
24 Doors, (complete), @ $10 each	240.00
2 Stairs, (complete)	80.00
2 Marble Mantels and 4 Pine Mantles	75.00
Base-Boards and Shelving	25.00
Nails, Sink, and Pump	34.00
Cartage, average one mile	40.00
Carpenter's Labor (not included above)	250.00
Painting, two coats	100.00
Extra for Girder Supports, Grading, etc	60.88
Total cost of materials and construction	$2,000.00

Probably the average cost, throughout the country, may be a little less, as brick and wood are cheaper in most localities. Where necessary to economize more, some saving may be effected in blinds, stone steps, etc., but the small additional cost of these will be amply repaid where it can be possibly afforded.

The Element of Pluck.

People in pecuniary misfortune, in estimating their liabilities and resources, seldom consider among the latter the element of *pluck*. The tendency with nearly all unfortunates is to magnify difficulties, and underrate or wholly forget their power to overcome them. A man in good health, with unsullied character, need fear no evil, nor be robbed of his happiness, no matter how adversely things may appear. If he is heavily in debt, and can satisfy the community that he is straining every nerve and appropriating all his resources to discharge his obligations, there is no danger of his losing a well-earned reputation, and there is no reason why he should not be cheerful in his family and joyous in his own heart. The self-consciousness of integrity, coupled with the approving smile of the Father above, should enable a man to face every foe and surmount every difficulty. If instead of burdensome debt, he is overtaken by fire or flood, so that the accumulated comforts of years are swept away in an hour, he gains nothing by sitting down, folding his arms, and weeping over his misfortune. "Up and at it," is a familiar, but expressive phrase. Pluck is a lever that upheaves difficulties. Before a resolute man, the green withes of adversity snap like threads of tow. It is not enough that a man in trouble has physical force to execute, and mental clearness to plan, but behind both he needs the impelling power of pluck. The steam engine may be ever so perfect and bright, the engineer ever so competent, but both would be unavailable to draw the long line of cars if *steam* were lacking. Pluck is to a man what steam is to the railway train.

A farmer, a short time ago, came to a well-known citizen for advice. He was in low spirits, matters had gone wrong with him through loans to friends, and speculations outside of his farming business, until his debts became exceedingly burdensome. Unaccustomed to such interruptions in his hitherto unwavering success, his spirits gave way. Brooding over his troubles, he became morose and gloomy. He had no cheerful words for family or friends. He allowed trifling causes to keep him from church, and instead of listening to the encouragement of the gospel, he moped on Sundays around his house and barns. Wherever he went he carried a "hang-dog look," and whatever he did, was done feebly, as though strength and ambition were both gone. In this condition of things a friend advised him to open his mind to the citizen above mentioned, whose long familiarity with trials made him capable both of sympathy and counsel. The conversation soon developed the fact that the farmer owned a property worth thirty thousand dollars, that his entire indebtedness did not exceed thirteen thousand dollars, and that his income exceeded his outgoes, including interest on his indebtedness, by one thousand dollars. "Why," said the citizen, "have you been disheartened over such a condition of affairs as this? What! a surplus of $17,000, and a net income of $1,000 per year to apply to your debts, which will grow less and less burdensome as successive payments are made. Why, my friend, thousands of poor fellows struggling with debts without any surplus income, would be happy to step into your shoes and sing like a lark over their good fortune. There is but one thing that is the matter with you, my friend, you have simply lost *pluck!* Yes! one other—professing faith in a Divine Providence, you have also lost *trust.*"—So after many encouraging words on the part of the citizen, he bid him good-bye with a strong grasp of the hand, and with the parting words, "thank you, sir, I feel better." And so he did; his eyes were opened to realize that, as in the case of thousands of others, his troubles were imaginary. How different the spirit of a furniture dealer of my acquaintance, whose entire property above ground was recently destroyed by fire in a single night. Three buildings, a stock of furniture, household comforts, wardrobes, keepsakes, indeed everything, so that morning found the family dispersed in friendly dwellings with nothing saved but the garments in which they fled.

But see this man's pluck. In answering a friend's sympathizing letter, he writes: "Your kind letter of sympathy at our late mishap was duly received. I have so much to tell I hardly know where to begin. Well, thank Providence we are all well, in excellent health and full of pluck. We have almost forgotten about it, and are tired of talking fire, and are on the go-ahead track only. In less than 24 hours we had a store rented, and commenced to get ready for a new start. Some folks could not understand how I could take it so coolly, and if our loss had not been so complete and total, I might have been suspected from my coolness of having a hand in it. I have been rusting for two years, my son ran the business, while I did the playing. But now the rust is pretty well rubbed off, and I am about as bright as ten years ago." To any one in pecuniary distress, let me suggest that the way out of difficulties is not by hang-dogged-ness, but pluck. C. C. N.

Science Applied to Farming.—VI.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

How Science is Saving Money and Increasing the Profits of Farming—☞ The Proper Time for Harvesting Hay and Clover.

"Haying time" is close at hand, and will bring with it an opportunity to put in practice some principles brought out in previous chapters. And while we need Experiment Stations of our own to add to our knowledge of these principles, yet the recent investigations at the European Stations have yielded results worthy of careful attention.

The proper time to cut hay and clover, depends 1*st*, upon the *Feeding Value* of the crop gathered; —2*nd*, upon the value of the after-growth;—3*d*, upon the value of the roots and stubble left to enrich the soil for another crop.

The *Feeding Value* depends: *First*, upon the quantity gathered, and *Second*, upon the greater or less proportion of nutritive material it contains.—To obtain some definite knowledge concerning these points, Dr. Wagner, director of the Experiment Station at Darmstadt, selected a portion of a field of red clover, where the growth was uniform, and measured three plots, each containing about 2,300 square feet, (8½ square rods), numbering them I, II, III. On May 22nd, just before the clover began to blossom, plot I was mowed, yielding 85 lbs. of cured hay. June 13th, when in full blossom, plot II was mowed, with a yield of 114 lbs. of dry hay. July 1st, near the end of blossoming, plot III was cut, and 128 lbs. of dry hay obtained. The gain in 40 days, May 22 to July 1, on 8½ square rods, was 43 lbs., or about 800 lbs. per acre.

But did the increase of feeding value correspond to the gain in weight? To answer this, Dr. Wagner carefully analyzed the several cuttings, and found that, as is always the case, the young succulent clover was rich in albuminoids, and contained but little crude fiber. But as it grew older, the percentage of albuminoids (nitrogen) decreased, while the crude fiber as constantly increased.

Table 7.	Yield of Cured Hay.	Organic Substance in the Hay.	The Organic Substance of the Hay contained		
			Albuminoids.	Crude Fiber.	Other Carbohydrates.
I.—Cut May 22. II.—Cut June 13. III.—Cut July 1.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
I.—Just before blossom	85	64.2	11.8	21.9	30.6
II.—In full blossom	114	90.5	12.2	36.4	41.9
III.—Toward end of blossom	128	100.2	12.8	42.8	46.9

Let us study this table carefully. We have previously learned that the albuminoids (3d column) are the most valuable, and the crude fiber the least

valuable part of the food. In 40 days the amount of organic substance increased from 64 to 100 lbs.—just 36 lbs. But in this there was a gain of only 1 lb. of albuminoids, while the crude fiber increased about 21 lbs., or nearly doubled. And during the last 19 days (June 13 to July 1) there was hardly any gain of albuminoids, although the crude fiber increased 6½ lbs., and other carbo-hydrates 5 lbs. These figures show most clearly that the older growth was far less valuable as compared with the younger, than the increased weight of 43 lbs. would imply. Dr. Wagner calculated the money value of these crops, as based upon the nutritive values of the albuminoids and carbo-hydrates which each contained. Here are his figures:

Table 8.—CLOVER HAY.		Value.
I.—Cut just before blossoming....	85 lbs.	72 cents.
II.—Cut in full blossom.....	114 lbs.	$1.05 cents.
III.—Cut near end of blossom.....	128 lbs.	94 cents.

However theoretical these calculations may seem, they are doubtless not far out of the way as an expression of the relative values of the crop at the different cuttings. We may illustrate this very clearly by another consideration which we have previously discussed, namely, the *digestibility* of the different crops. How much of the material of these different crops would animals which consume them *actually digest*, and make over in flesh, fat, milk, etc., or utilize in other ways in their bodies? Some experiments by Dr. Wolff, of the Station at Hohenheim, will aid us in answering this question.

Four different portions of a clover field were mowed at as many different times, and the hay fed to sheep. Four experiments, with hay of different degrees of maturity, were thus made. During each the hay consumed by the animals, and the excrement voided, were carefully weighed and analyzed. Thus the proportions of each crop which the animals digested, were learned. Below are the results:

Table 9. TIME OF CUTTING THE CLOVER.	Out of every 100 lbs. of the following substances contained in the clover cut at the different periods, the animals digested the number of pounds set under each, viz.: Organic Substance.	Albuminoids.	Crude Fiber.	Fat or Oils.	Other Carbo-hydrates.
	lbs.	lbs.	lbs.	lbs.	lbs.
Just before blossom.....	74.	74.	60.	65.2	82.7
In beginning of blossom.....	68.	76.1	53.	67.	74.5
In full blossom.....	63.9	64.3	49.7	61.2	71.8
Near end of blossom..... ...	58.3	58.6	38.8	44.5	70.7

It appears, then, that from every 100 lbs. of organic substance in the young clover, the animals digested 75 lbs., or nearly three-fourths. As the clover grew older, it became less and less digestible, until in the most mature crop only 58⅔ lbs., or little over one half, was digested. Taking the several ingredients of the organic substance separately, we find a similar decrease in digestibility as the plant matures. From every 100 lbs. of albuminoids the animals digested in the youngest clover 74, and in the oldest only 58⅔ lbs. The amount of crude fiber digested falls in like manner from 60 to 39 per cent.—Remember that all which was not digested was passed off as excrement. It was worthless for nutrition, and was useful only as manure. The youngest clover was nearly as digestible as meal or potatoes, while the oldest was but little more digestible than straw.

Now apply these results to those obtained by Dr. Wagner, in Table 7, above. The 85 lbs. of hay of Plot I, cut just before the beginning of blossom, contained 64⅕ lbs. of organic substance. According to Table 9, 74 per cent of this, or 47½ lbs., would be digestible. Comparing the other items in Tables 7 and 9, we have the following results of Dr. Wagner's crops of clover:

Table 10. 8½ RODS CLOVER CUT.	Contained Organic Substance.	Per cent Digestible.	Pounds Digestible.	Value as calculated by Wagner.
	lbs.			
I.—Just before blossom.....	64.2	74	47.5	72c.
II.—In full blossom.....	90.5	68	61.6	105c.
III.—Near end of blossom.....	102.2	58	59.3	94c.

To every one having grass or clover to harvest, such facts as these are very important. From May 22d (I) to June 13th (II), there was an increase of 29 lbs. of hay, including 26 lbs. of organic substance. The digestibility, however, decreased from 74 to 68 per cent during this time, so that the actual gain of nutritive material was (61½—47½) 14 lbs. But from June 13th (II) to July 1st (III), while there was a gain of 14 lbs. of hay and 11½ lbs. of organic substance, the digestibility decreased 10 per cent, so that there was not a gain, but an actual loss of (61½—59½) 2½ lbs. of nutritive material. This makes a bad showing for the older crops, but the case is, in fact, still worse. Table 7 tells us that the earlier crops contain the largest proportions of the albuminoids, and Table 9 that a larger percentage of these is digestible in the younger clover. It is clear then that the digestible material is richer in nitrogen, and hence worth more pound for pound in the younger than the older crops.

We are then forced to the conclusion that, as far as the FEEDING VALUE *of the crop is concerned, the most profitable time for harvesting clover is a little before the period of full blossom.*

The experiments upon other grasses have not been as extensive, but so far as they have been made, as well as from analogy, we may adopt the same conclusions. And these results obtained by positive science, correspond with the experience of the most observing, intelligent, practical men.

Another question of considerable importance must be considered. If the grass cut 20 days before the close of blossoming is then at its highest feeding value, by cutting it thus early, *we have 20 days more for the aftergrowth*, and this too at the period before the dryest, parching weather arrives. It is evident that there will be a much larger growth of aftermath than if the first cutting was delayed. We have not space to go into details, or to give experiments on this point. They are hardly needed.

One objection, if not the only one, to early cutting of clover especially, may be named, viz.: clover roots gather much organic matter which enriches the soil for other crops, even when the clover itself is mowed for fodder. Experiment and observation seem to show that these roots continue to develop and enlarge up to the full maturity of blossoming and seed—gathering an increasing amount of fertilizing material. When, therefore, the clover stubble is to be plowed under for other crops, the loss from later mowing is *partly* made up in the increase of roots and stubble. How much account is to be made of this, we have, as yet, not sufficient experiments and investigations to decide.

Bee Notes.

BY M. QUINBY, ST. JOHNSVILLE, N. Y.

Among the domestic animals, we have various grades of improvement. Among horses and cattle, the various breeders find points in each grade that they wish to propagate for some particular purpose. They select parents that have points that they expect to find in their offspring. The beautiful Durham is not expected from the wild race of the tropics. Among bees, the beautiful and amiable Italian is not expected from the black, vicious, and often more indolent native. Both varieties may have some traits that it is desirable to propagate, while both have some which might be advantageously left out.

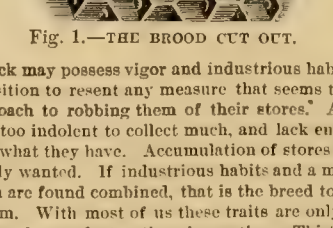


Fig. 1.—THE BROOD CUT OUT.

One stock may possess vigor and industrious habits, and a disposition to resent any measure that seems to them an approach to robbing them of their stores. Another may be too indolent to collect much, and lack energy to protect what they have. Accumulation of stores is what is usually wanted. If industrious habits and a mild disposition are found combined, that is the breed to propagate from. With most of us these traits are only ascertained by close and attentive observation. Thirty years ago an old lady, when asked to fix a price for one of her colonies, replied that she had smarter bees than any one else, they swarmed early and often; she had probably discovered a fact, without being able to trace it to any cause. What is there to prevent changing all our stocks into the best in one summer, if all the queens are selected from such only? It is time this point received attention. In rearing cattle, it will not do to check the growth by an insufficiency, or an inferior quality of food. Queen bees need a full development as well as cattle. Much discussion has been had relative to rearing queens in full stocks, or in small nuclei; some claiming that a full stock is the most natural. It will not be discussed here, further than to say that a full supply of nutriment is required to rear good queens: usually the least trouble and expense, where many queens are to be reared, is to make a little box to represent a movable comb hive. Combs of full size of hive can be used on the same principle, the size makes but little difference, if there are nurse bees enough. It would seem that the Creator had designed especially to facilitate the increase of the best stock. In addition to the number of queens provided,

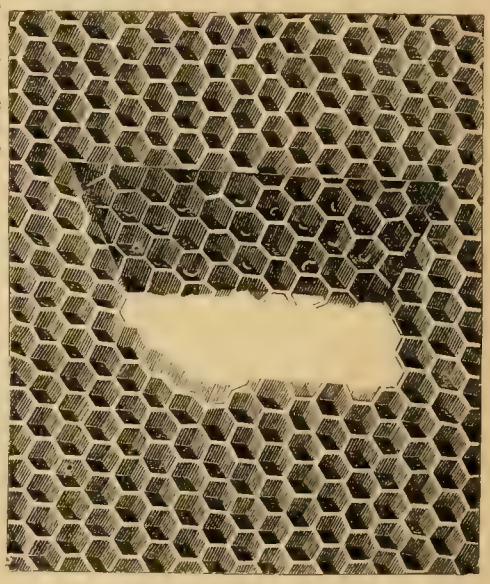


Fig. 2.—THE BROOD FIXED IN THE COMB.

when a swarm issues naturally, it is so arranged that they can be increased almost indefinitely. Eggs of a fertile queen are of two kinds—one produces males, the other females. Means of deciding which will produce drones, and which workers, are given to all observers, as one kind is deposited in worker cells, the other in drone cells. Whether the *act* of depositing the egg in the large or small cell decides the sex or not, will not now be discussed. One thing is certain, the eggs deposited in worker cells that ordinarily would produce workers, can be converted into queens. When young bees not many days old, are destitute of a queen, and are provided with eggs, or young brood, in season, they at once proceed to provide one or more. It is well to wait, before commencing to raise queens, until there is a prospect of drones hatching, as soon, at least, as the queens do. If bees to commence with can be procured a half mile away, it is better. Get a quart or thereabouts. Now, from the stock you wish to breed from, take a piece of comb containing brood. It is better to get it all of one age. The first or second day after the eggs are hatched, is best. Take out the comb containing brood, and hold it so that the light shines directly into the bottom of the cells. Find a spot where the eggs are just hatched. Take such; as queens will mature from them a little sooner than from eggs just laid. The larvæ that have been fed too long as workers, can not be so well developed into queens by nursing. New comb is better than old. If old and tough, cut off half the length of the cells with a knife. Cut out a piece the shape of fig. 1, 3 or 4 inches long, by ½ an inch wide. Then cut from a larger piece—let it be clean—a place that this will just fit. Give an inch space under it, in the shape shown in fig. 2. Let the piece of brood be crowded in firm enough to hold a few hours, until the bees weld it fast. Combs should contain abundant honey for several days. If bees to raise the queens are to be taken from the home yard, they should be mostly young, if possible. Go to a strong stock in the middle of the day, when most of the old ones are out to work, raise out a comb or two, and shake or brush the bees into a box, made with joints close enough to keep them when the lid is on. Young bees will not be apt to fly. Have a little piece of wire cloth one side somewhere, in hot weather, for ventilation. Make a hole in the bottom of the box, in which the combs with the brood ready for the bees, are to be put, and one to match in the top of the one with bees. Open both and set the two together, and the bees will creep into the upper one with combs and brood. Keep confined for thirty-six hours or more, when they may be allowed to fly out from the stand they are to occupy. More than one piece of brood can be put in the same comb, if many are wanted, and there are bees enough to take the proper care of it all. If brood that is taken for queens, is not over two days old from the egg, a queen

can not be matured from it in less than ten days. When the first one matures and comes out of the cell, she makes it her business to look up other queen cells the first thing, and destroy every competitor. If the beekeeper wishes more than one queen, the extra cells may be cut out before any hatch—leaving one. Put those taken out in their natural position in a box, prepared as for brood, using cell instead of brood. Manage as before, and a gain of several days is obtained. As many as there are cells can be prepared. Care is needed not to bruise the cells, or turn them over roughly. The queens inside may be very tender, and rough handling may kill them. When combs of full size of hive are used, instead of small ones, a little more care is needed to keep warm, etc. There will be this advantage in large combs. The queen can be established in a full colony, and there is no trouble in transferring her. When she is once established, and begins to lay, go to a hive that is well filled with bees, and has several combs well filled with sealed brood that needs no further nursing, take one or two, shake off the bees, and put them in with the young queen. No fighting will occur with the young bees as they hatch. More combs may be added until it is thought to be strong enough, with what they will rear of their own. When an increase of colonies is desired, instead of surplus honey, they can be increased faster in in this way, than in any other. New colonies can be made to assist others long before the summer is through, when managed properly. Remember it is best to have all colonies strong, by having others to assist when necessary. Do not allow bees to sit outside and do nothing for want of room in the hive to store their gatherings. If no room can be given for boxes for surplus, or combs to hold honey for extracting, it is best to add to the number of colonies. Continue to examine into the exact state of every hive.

Ogden Farm Papers.—No. 64.

BY GEORGE E. WARING, JR.,

Referring to the ventilation of a liquid manure vat described in Ogden Farm Paper, No. 62, Mr. J. Wilkinson, of Baltimore, makes the very good suggestion that the vat be ventilated, (where the lay of the land will allow), through an underground tile drain-pipe of large size. In this case a small opening in the covering of the vat will be sufficient, and the pipe should lead from the upper part of the vat well above the water level, to some point sufficiently distant to discharge the emanations where they will do no harm, and enough lower than its starting point in the vat to secure the down-hill flow of the heavier and cooler air; if the drain is placed three feet underground, Mr. Wilkinson says that it will be sufficiently cool for the air in warm weather to maintain a constant flow towards its lower end. By this arrangement fresh air will constantly be drawn in at the surface of the vat, and the foul air from the manure will flow out through the pipe. To prevent opposing winds from interfering with this flow, the mouth of the pipe should be thoroughly shielded against any direct blast. I have never tried this plan, but I see no reason why it should not work satisfactorily. Mr. W. accompanies his letter with a diagram showing his method for collecting surface water for storage during drouth, so that the rainfall on a large area can be conducted to the central pond or reservoir without danger of washing away the earth by accumulating in too strong a flow at any point. The principle is simple, and will be applicable in a great many cases where the question of water-storage in dry weather is the most important one connected with the raising of stock. It is simply to arrange shallow surface-gutters, (which may be sodded, and which will form no obstruction to the mowing-machine), in such a manner that each one shall accumulate the water of only a limited area, each running independently of the others to the central reservoir. The areas drained by all of these being equal, all will carry an equal amount of water, and with a little care in adjusting their fall, none will at any point have a sufficiently rapid flow to wash away the surface. The area drained may be steep or of gentle slope, according to circumstances, but when the water has accumulated in the gutter, it should be carried at such an angle to the slope of the ground as will prevent its getting up too much speed. If the inclination of the gutters is slight enough, the system may be used for collecting water even from plowed ground.

G. B. S., Amelia Court House, Va., describes a large tract of flat ground of excellent quality which is frequently flooded by the rise of a creek running through it, and of branches which come in from the surrounding hills. Much of the land is soft, some of it is underlaid by quicksand, and the outlet is not low enough for satisfactory drainage by open ditches. He asks how he shall arrange for its drainage with tiles. I have not generally found that large areas of this sort, having an insufficient outlet, are made satisfactory by tile drainage, especially if the tile-drains are long. Soil of this character is often very silty, and it is difficult to give enough fall to keep up a regular flow that will carry the silt to the outlet. If tiles are to be used at all, it is better that they should be only for short branches, each with its independent outlet into an open ditch, the mouth of each being protected against vermin and against the action of the current in the ditch—all of which requires watching, and is somewhat troublesome. As a general rule, the money that such drainage costs would be spent to better advantage in the improvement of higher-lying land, but there is a method by which these large low meadows may be drained, and the cost of which, if the land is of good quality, will not be very great, and will be well repaid; that is, the system that is in universal use in Holland. The land to be cultivated should be separated by dykes or embankments from the sources of external water, and should then be artificially pumped out to a sufficient depth to secure the easy drainage of the soil by tiles or by open ditches. In alluvial ground, such as my correspondent describes, depth of outlet is the chief thing needed; this being secured, drains at quite distant intervals will keep the land dry enough, perhaps even fifty or one hundred feet apart. The water is to be removed in such cases by a pumping-wheel or by the Archimedian screw, either of which can be easily and cheaply constructed, and can be worked by a small windmill, or, in such a case as that described to me, by the water-power of the creek running through the land. The details for the work cannot be fully explained without the aid of diagrams, and they would vary for each case to be considered, but there are thousands of acres of good land in every state that may be easily reclaimed by this system, and which cannot be satisfactorily treated by any other that I know.

The same writer has found difficulty in keeping his deep-cans of milk at a low enough temperature, and has thought of surrounding them with dry earth as a cooling medium. This would hardly be satisfactory. Earth, as he proposes to use it, would not be rapid enough in its action, nor would it probably reduce the temperature sufficiently. But there need be no difficulty in cooling with water. If there is no spring or well available, a small, deep cistern will answer a perfectly good purpose. The water may be pumped with a very small windmill, one costing less than $100, and kept flowing in a small stream into the vat, the contents of which should be not much greater than is necessary to accommodate the cans to be used. The overflow from this vat should run directly back into the cistern, so that there shall be, when the wind blows, a constant circulation of water coming from deep in the ground, where it will be as cool as ordinary well water. The same water being used over and over, no considerable amount will be needed, but the deeper the cistern is made and the narrower, so as to have a good proportion of its water in contact with its walls, the cooler will it be. The suction-pipe should come from the lower part of the cistern.

Mr. S. asks advice about a Jersey cow, whose milk has such a strong flavor as to be disagreeable, and to spoil the flavor of the butter of his whole dairy. My advice in such a case would be brief: get her into the beef barrel as early as convenient.

Much has been said about an experiment made by Mr. Linus W. Miller, of Chautauqua County, New York, in keeping his dry cows two winters in succession on a diet of three quarts of corn-meal per day, without hay, straw, roots, or any other food. I have watched this experiment with some care since it first came into notice, but without much confidence that it would be continued so long as it has been, or that it would result so well as in Mr. Miller's case it seems to have done. His statements seem to be well endorsed, and he claims that his cattle have been kept in perfectly good condition, and have come out in the spring rather better than usual, as shown by their general condition, and by the fact that the returns from his cheese factory show an increase of milk over previous years. I supposed that the result of this experiment would be a diseased condition of those parts of the digestive organs of the cows which are intended to deal with coarse and rough forage, and which, in a state of nature—and thus far under conditions of domestication—are kept constantly at work; but the cows in this experiment seem to have come through two seasons without having their cud-forming and cud-chewing capacity at all diminished. It is to be hoped that others will experiment in the same direction, for certainly if we can keep ordinary-sized cows in good condition, through the winter season at the cost of only three quarts of corn-meal per day, we shall have gained a very great point. I cannot try such experiments, as my cows are all thoroughbred breeding animals, and too valuable to tamper with; the experiment would involve not only the question of the cow's health, but the character of the progeny, which is very important. Those whose cows bear calves only that they may give milk, might try it with very little risk, and with a very good prospect of economy in their winter feeding operations. If I were going to advise in this matter, I should say that, Mr. Miller's experiment having succeeded, it would be wise for all situated as he was, to feed three quarts of corn-meal per day, and, in addition to this, five pounds of cut hay, making a compromise between the two systems without entirely losing the benefits of either. In this case, supposing a cow to consume twenty pounds of hay a day as ordinarily kept, the saving would be the difference of value between fifteen pounds of hay and a little more than five pounds of corn-meal.

Mr. Miller's theory is, that the action of the first three stomachs of the cow is not essential to her health, but is only nature's way of enabling her to macerate and grind the coarse and bulky food that she finds in a wild state; and that it is as legitimate for man to substitute for this expensive style of preparation, (expensive because it requires an immense amount of labor on the part of the cow's system), the preparation of the more concentrated kinds of vegetable food by the cheaper means of artificial grinding.

A correspondent in Du Quoin, Ill., asks: "What is my Jersey cow worth?" He says an ordinary cow, giving three-quarters of a pound per day of butter worth thirty cents per pound, barely pays for her keeping. His cow, (seven-eighths Jersey), gives 1½ lbs. per day worth 45 cents per lb. He says that in his experience this *proportion* of product would hold good throughout the year. He finds by his record that his native cow in winter with 4 quarts of meal and 4 quarts of bran per day consumes 20 lbs. 12 oz. of coarse feed daily, while the Jersey with the same grain, requires but 9 lbs. 12 oz. of coarse feed per day, or a daily saving of 11 lbs. of hay, worth last winter one cent per lb. He thinks that the answer depends on an "if," *if the common cow pays for her keeping*, then his Jersey is worth a great price. That she does pay for her keeping may well be doubted, but that the Jersey cow, as he describes her, is very profitable, there can be no doubt. To answer his question directly, and say how much the animal is worth, would be impossible, but there certainly can be no comparison between her value and that of the inferior animal described. He gives the following on feeding, which agrees with my own opinion based on experience and observation: "For milk, we would feed hay and bran; for butter, we would feed corn-fodder or meal. Corn-meal has always reduced the flow of milk, but increased the amount of butter;

corn-fodder produced about the same effect. Would prefer corn-fodder as a steady feed to hay. Yellow corn-meal will color butter much better than white meal. Early-sown rye makes excellent winter pasturage, and is very profitable, but the best fall and early winter feed is sorghum planted thickly in drills." (This last sentence applies to hot climates.)

I have recently had a visit from Mr. Edward Burnett, of Southborough, Mass., to whose operations I have before referred in these papers. He has adopted in his operations the only system that now seems to me consistent with profitable farming in the older settled parts of the country, that is, the principle that the way to make up for poor soil and an expensive system of cultivation, both of which help to cut us down in our competition with the west, is to produce special articles *of first-rate quality*, and to bring them to the favorable notice of those who are willing to pay extraordinary prices for what suits their fancy. Mr. Burnett is a large producer of butter, for which he gets a round price, mainly from private customers, but he has gradually worked into a large trade in pork. He feeds, on his own farm and others, a good class of well-bred shotes, giving them no refuse of any kind except skimmed milk, and making up the rest of their diet with corn and oats, and a certain amount of clover and corn-fodder. These pigs he kills at the rate of about one hundred per month from November until March, dressing an average weight of about one hundred and fifty pounds. Everything about his establishment is as cleanly and well arranged as in a large public abattoir, and he gives his personal attention to every part of the business. This perfect cleanliness of feeding and handling being well known, he has not yet been able to keep pace with the demand for his hams, bacon, jowls, sausages and lard. The lowest price for which any part of the animal is sold, is twenty cents per pound, net cash, at which price he has already contracted to deliver six thousand pounds of lard next winter. His theory is, to sell nothing whatever with the name of his farm attached to it except for a price considerably above that of the ordinary market, and so far as possible, to keep nothing that will not readily command this higher price, and he is able to live up to his theory more closely than most of us are.

It is a little curious to see how all of the better farmers at the east are adopting very simple rotations. They often begin with quite an elaborate series of crops such as the books recommend for the improvement of the soil, but they generally come around after a little experience to something like that which Mr. Burnett has "worked into": first year, corn on an inverted sod, with a good dressing of stable manure; second year, mangel-wurzel, very heavily manured; third year, barley, seeded down in the spring with grass; and then grass for years afterward, so long as top-dressing will keep the crop good, or until the land is again needed for corn. I asked Mr. B. whether it paid him to raise corn. He said that it did not, but that he considered it absolutely necessary to have the fodder to feed his cows in winter—an end that he could gain more satisfactorily by sowing his corn thickly in drills for fodder and not troubling himself about the grain at all.

I am often at a loss to know how to treat reports concerning the large yield of very small herds of cows which have been selected with great care, and which are treated as well as cows can be. I am sometimes disposed to doubt their truth, but thus far investigation has always shown them to be well founded. A cattle-dealer in Connecticut reported a Jersey cow that yielded 574 lbs. of butter in a year. Thoroughly as I am in favor of the breed, I refused to believe this statement until the owner and his wife, Mr. and Mrs. J. H. Sutliff, of Bristol, Conn., who are known to be trustworthy people, made affidavit that during the whole year they had employed no servants in the stable or dairy, but taken direct personal care of everything for themselves, and had kept a careful record. The cow came in Sept. 24, 1871. "The trial commenced Oct. 1, 1871, with the following results: October, 60 lbs. 8 oz.; November, 52 lbs.; December, 55 lbs. 5 oz.; January, 57 lbs. 4 oz.; February, 54 lbs. 2 oz.; March, 54 lbs. 6 oz.; April, 47 lbs.; May, 49 lbs. 7 oz.; June, 45 lbs. 9 oz.; July, 37 lbs. 12 oz.; August, 31 lbs.; and September, 30 lbs. Total, 574 lbs. 5 oz. During November considerable milk was sold, so that less butter was made." This is the champion Jersey to this date, the largest authentic report before this having been that of Mr. Motley's cow, Flora, producing 511 lbs.

Another Connecticut man sets us all a very good example—Mr. F. M. North, who lives at East Berlin. He has seven acres of mowing and pasturage, and keeps three grade Jerseys, bred by himself. These cows calved Feb. 26th, Feb. 27th, and March 7th, 1874, and an exact account of their product was kept from March 1st to December 15th, during which time 700 quarts of milk were consumed in the family, (estimated), and 790 quarts were sold, yet in the time mentioned, 1,105 lbs. of butter were made, being an average of 368¼ lbs. per cow. In September it took a trifle over 7 quarts of milk to make a pound of butter. In November, when the cattle were fed eight quarts per day, of bran and meal, it took but 5½ quarts. I know nothing of the circumstances of this case, save that the account is given in great detail, with name and date, and is contributed by W. H. Yeomans, of Columbia, Conn., to the Live Stock Journal. From what I know of the capabilities of the breed when carefully kept on small places, I do not question the truth of the statement.

Mr. S. G. Livermore, of Robin, Iowa, and J. W. Riley, of Troy, Ohio, both send reports of great success with their Jersey cattle, but they and all others who favor me with such letters will understand that, while I read them all with great satisfaction, it would not be fair to the general readers of the *Agriculturist* to give too much space to such details concerning a single breed.

Mr. William Spicer, of West Hallock, Ill., reports experiments with the deep-can system, and I regard the adoption of this system so important to the general dairy interests of the country, that I make no apology for my frequent reference to it. Mr. S. has made three comparative trials with cans holding 38½ lbs. of milk, and with ordinary milk-pans. On the first trial, the milk being cooled before setting, the temperature of the room 50° to 55°, and the cream being taken off forty-eight hours after setting, there was made 1 lb of butter from $21\frac{3}{10}$ lbs. of milk in cans, and 1 lb. of butter from $21\frac{8}{10}$ lbs. of milk in pans. In the next experiment the conditions were the same, except that the temperature was from 45° to 50°; the cans made 1 lb of butter from $19\frac{8}{10}$ lbs. of milk, and the pans made 1 lb of butter from $22\frac{2}{10}$ lbs. of milk. In the next trial the temperature was from 55° to 60°. The cans made 1 lb of butter from $22\frac{1}{10}$ lbs. of milk, and the pans, 1 lb. of butter from $21\frac{3}{10}$ lbs. of milk. He says, "We made several more trials with about the same results, and notwithstanding the decision of the Solebury Farmers' Club, or the predictions of old dairymen, we are setting milk in deep cans, each of which yields about 3½ inches of solid cream and a superior quality of butter."

This experiment, like many others that I have published, supports my original view that there is neither a gain nor a loss of quantity resulting from the deep-setting. In any proper setting, deep or shallow, all the cream is undoubtedly raised, but the advantage in uniformity of product, improvement of quality, and saving of labor, secured by the deep-can system, constitute advantages which it seems to me that no unprejudiced man can disregard.

ASSISTANCE IN HATCHING EGGS.—Assistance is sometimes of great importance in hatching, especially in the case of the thick shells of the eggs of Asiatic fowls and of ducks. It is a good plan to sprinkle or dip the eggs in tepid water every day at noon for a week before hatching. The shell cracks more easily. When the shell is chipped, if the bird does not come out in a few hours, it should have just a little help, and but a little. Break the shell a little each side of the chip, and tear the membrane where it is dried. Great care must be taken not to draw blood. Make only just room enough for the bill and head to get free. Having done this, put the egg back again under the fluff of the hen, and watch the progress made in hatching two or three times a day. We save the lives of a good many chickens and ducks every season by a little timely aid while hatching. If kept quiet and carefully handled, no harm will result to mother or brood.

CARE OF ROOT CROPS.—Roots can not be grown successfully without perfectly clean and frequent cultivation. The ground may be rich but yet produce a poor crop of roots if weeds are permitted, or if the soil is allowed to become dry and hard. An extra outlay of $5 or less per acre for labor in weeding and cultivation, may very easily make a difference of $25 or $50 in the crop. The same is true of corn, but especially of roots, which insist on having a mellow, clean soil, or they refuse to grow.

Spelling Matches—Keep them Going.

The "Spelling mania" has been very contagious during two or three months past. One can hardly take up a newspaper, printed anywhere from Maine to Nebraska, without finding in it an account of one or more spelling matches. Probably not less than twenty thousand such contests have been held this year, in which an average of fifty persons have been directly engaged, and all of these million people, young and old, have performed a deal of studying over the right orthography of a very large number of words. Then an average of over 100 persons have attended these matches, as spectators, and carefully watched the spelling of every word "put out," so that at least 3,000,000 to 4,000,000 people have improved their spelling ability to a considerable extent. We know that in a single locality at least one hundred families were actively engaged, parents and children, morning, noon, and night, in going over and over the spelling books and lists of "test words," while in the shops, stores, and manufactories, the right spelling of this and that word has been the main topic of conversation. Even in a barber-shop, the retailing of scandal and unimportant news has given place to spelling discussions; and had not the "Beecher Trial" come in to claim extraordinary attention, perhaps three-fourths of our whole population would have had "spelling on the brain."

We look with a good deal of favor upon all this. Even if it stop right here, the influence will continue many years. Everybody will be more careful about sending out letters and other written documents defaced with badly spelled words, which always give the impression of illiteracy. These matches have afforded much amusement, and that of a far more useful character than a majority of the entertainments commonly supplied. For example, take two benevolent societies we know of. One of them held a "fair," for which a lot of fancy articles, of nearly a useless character, were got up with much time and expense, and the attendants were dragooned into buying what they did not want, and had no earthly use for—all "for the good of the cause." The ending, and chief attraction of the af-fair, was a sort of "kissing bee." The net proceeds were $65, including the income of a lottery ring-cake, and lottery grab-bag. The other society had a spelling match, to which a few leading citizens lent their influence as participants, and were followed by the young people generally. The only preparation was the useful spelling study in families. The net result of the quiet but amusing entertainment, was over $75 taken at the door. This last is only one of several thousand similar doubly useful enterprises of the present year. We sincerely hope the spelling campaign will reopen next autumn with increased energy, and also that the good old plan of choosing sides and spelling matches in all our public schools will be the order. They will furnish legitimate entertainment, having no unhealthful moral tone, and we shall, as a nation, become far better "spellers."

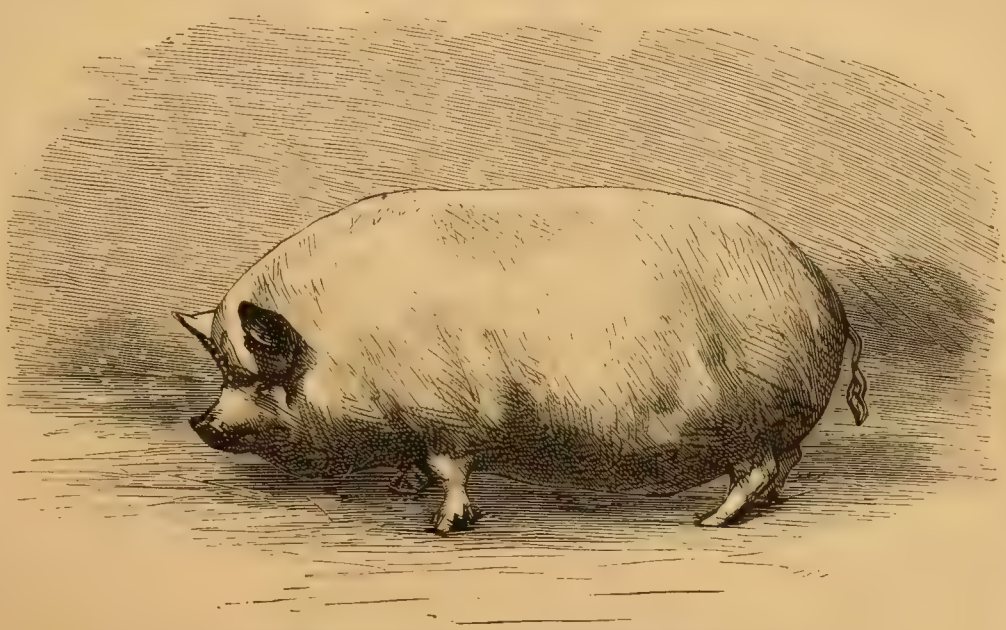
The Beacon Downs.

The importance of giving attention to the breeding of classes of sheep which will be adapted to the needs of the various localities of the United States, has been frequently referred to. The Merino has been improved until it suits our purpose in some districts, but that purpose is wool of a certain grade only. Where there is a demand for coarse or long wools, or for mutton, different classes of sheep are required. We want a sheep larger than the Southdown, but of equal quality for mutton, and with a heavier fleece; and one finer than the coarse fleece of the pure Cotswold. The Lincoln and Leicester do not seem to be adapted to our climate or methods of agriculture, and are out of the race. We have the Cotswold and Southdown, but these fill only a very small part of our needs. In Great Britain there are some thirteen distinct breeds, which occur to us as we write, each of which is paramount in its own exclusive domain, and yet that country is smaller than any one of several of our states, and but very little larger than the State of New York. How much greater scope then is there with us, with our immense territory, marked by great diversity of soil, climate, and surface, for a much greater diversity of character in our sheep. Unfortunately our sheep have been deteriorating instead of improving, and our so-called native sheep, while they present variety enough, their difference is mainly in degree of inferiority. As an illustration of a praiseworthy effort to meet the want referred to, we give the accompanying portrait of a sheep from a flock raised by Mr. Crozier, of Beacon Farm, which were produced by a cross between an imported Southdown ewe and the Cotswold ram, Kingston, imported in 1868. This ram is a choice animal, and has been the winner of many prizes in England, Canada, and the United States. The original parents of these sheep were well selected and of choice quality. The cross was made in 1868, and the produce of this ewe and ram, have been bred in-and-in with the result of producing a sheep of which the engraving is an exact representation. So far these sheep have exhibited good constitution, and produce a heavy fleece of combing wool, much superior in quality to, and of equal weight with that of the pure Cotswold, and much closer and denser upon the sheep's back, while they yield a carcass of mutton as good as, and one-half larger than that of the pure Southdown. Mr. Crozier states that he has none of these sheep to dispose of, as he intends to breed them for two years longer, until assured that he has a standard breed. He gives to them the name of "Beacon Downs." We hope Mr. Crozier will realize his anticipations, and that more of our intelligent breeders will turn their efforts in the same direction. It must be remembered, however, that a breed can only be produced and thoroughly established, by long and skillful effort, and by the most judicious selection of parents, with a very distinct idea of what is aimed at.

BEACON DOWN RAM.—BRED BY WM. CROZIER, OF BEACON FARM.

The Middlesex Breed of Pigs.

The pig which received the first "prize of honor" at the recent exhibition of fat animals at Paris, (France), was one of the Middlesex breed. Its portrait, here reproduced from a French journal, shows it to be a very fine specimen. The exhibition referred to, is held annually, under the auspices of the Minister of Agriculture and Commerce, for the reception of animals fattened for the butcher, of living or dead poultry, of grains, of farm products destined for industrial processes, such as flax, hemp, hops, etc.; fruits, fresh, dry, and preserved, fresh vegetables, honey and wax, cheese, butter, etc., as well as agricultural machines and implements. We take the opportunity of making this annual exhibition known to exhibitors in this country, as it may become an important means through which to make the great variety of such products raised by us extensively known abroad. By a decision of the Minister of Agriculture, the next exhibition will be opened for the reception of the products above enumerated, from the 14th to the 19th of February next, and will be open from the 19th to the 23d of February, (1876), inclusive. The animal here represented, is a sow, white in color, aged less than one year, and weighing over 500 pounds. She was bred from stock imported from England, by Mons. Emile Pavy, by M. Poisson, director of the "farm-school," (agricultural college), of Laumoy, France. The extreme precocity of this race of pigs, is one of its chief characteristics, for it has long been known as a "butchers prize" pig, having taken premiums at the Smithfield (London) Club shows, several times since 1841. It is an offspring of the famous old Yorkshire breed, but has been subjected to a successful course of improvement, which certainly has not ceased to continue in operation under the hands of the French breeders. Whether or not this breed would fill a place in our agriculture, is not yet known. Yet from study of the points of this pig, it is easily seen that it possesses many valuable qualities. As an example of what may be done in the course of a few years in improving a race of pigs, it is noteworthy, more especially for those who are honestly endeavoring to build up a class or breed which has many good characteristics, such as our own Chester Whites. This class of pigs has unfortunately suffered from ill-advised or ignorant breeders, but if those interested in its improvement, will honestly and skillfully work for a few years longer there is reason to hope that they may permanently establish an excellent type. Although we have such excellent breeds as the Berkshire, Poland China, and Essex, yet these are either black or black and white, and there is a prejudice existing amongst a large class of people in favor of white pigs, which makes it desirable that we should possess at least more than one white breed of good character. This refers more especially to the neighborhood of the great eastern cities, where there is a demand for pigs rather than for hogs, and in which a rapidly maturing white pig of a pure breed, with small bone and offal, and a good meaty carcass, is needed.



FIRST PREMIUM MIDDLESEX SOW AT THE PARIS EXHIBITION.

Walks and Talks on the Farm.—No. 138.

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"I believe," writes Geo. Geddes in the "Country Gentleman," "that Mr. Lawes' largest crops of wheat cost him more per bushel than those of medium yield."—Mr. Geddes should take time to study the experiments at Rothamstead, and their practical bearing, before he makes such a statement. There is no profit there, nor here, nor anywhere in poor farming. "Extremes are almost always costly," continues Mr. G., "and ordinary farmers can not safely take the risk involved in the attempt to raise the last possible bushel of grain, or to raise the largest steer that ever went to the butcher. We must follow safer methods, and depend more upon average results."—I have said the same thing a great many times; only that I want the "average result" to be a great deal higher and better than they now are, either on my own farm or on that of Mr. Geddes. "We try to read all that the men who are devoting themselves to scientific investigation," continues Mr. G., "write for our instruction, and we try to learn something from each other's doings. But when we read in 'Walks and Talks on the Farm,' that the manurial value of a ton of clover hay is $15.82, we are silent out of respect to the high source from which we receive the information; and we conclude that when the owner of Moreton Farm has drained all his land, removed all stones and other obstructions, and once thoroughly cultivated every part of his wide fields, and fed out many hundred tons of clover hay to his stock, and carefully saved and applied the manure made for many long years, he will probably arrive at the same conclusions that have been reached by those who have already had this experience."—I have no doubt this is true, but who are the men that have had this experience? John Johnston is one of them, and we all know that he has found it eminently profitable. And though 84 years of age yesterday (April, 11th), he is just as enthusiastic in regard to the pleasures and profits of *good* farming, as he ever was.

Mr. Geddes some months since gave an account of two fields of wheat—one after barley, and the other after summer-fallow. He thought the results showed that it was not profitable to summer-fallow. I endeavored to show that the experiment did not prove this. I did not, and I do not now wish to be understood as advocating the practice of summer-fallowing, indiscriminately. It is only the principles involved that I care anything about. Practices are changed or modified by circumstances, but principles are as true here as in Onondaga Co. It may not pay Mr. Geddes to summer-fallow. I do not say that it will, or that it will not. He must be his own judge. If he says it does not pay, I should never think of disputing him. But when he assails a fundamental and important principle of scientific agriculture, much as I dislike controversy, I am willing to defend the truth. When Colonel Waring intimated that Dr. Voelcker's experiments indicated that there was a loss of nitrogen when a soil was repeatedly stirred and exposed to the atmosphere, Mr. Geddes hastened to bring forward facts in confirmation. The facts I cared nothing about. But the principle involved was too important to be given up without positive proof. I showed very conclusively, as I think, that the experiments of Dr. Voelcker did not prove that there was any loss of nitrogen, or other valuable plant-food, from exposing the soil to the atmosphere. And I must do Col. Waring the justice to say that after talking with Dr. Voelcker, he has been candid enough to admit all that I claimed on this point. In other words, so far as these experiments go, there is no evidence of a loss of fertilizing matter by stirring and exposing the soil.—But Mr. Geddes still sticks to his facts. My next move was to show that these facts did not prove what was claimed for them. I do not say that they prove the truth of my positions. In fact, to be strictly candid, I do not think they *prove* anything. Mr. Geddes seems to think so too; for he now calls a meeting of twenty of his neighbors, and they have a talk on summer-fallowing. "All of them," says Mr. G., "are raisers of wheat, and but one of them has wheat growing on land that was last year summer-fallowed."—What of that? I could get twenty wheat-growers here, none of whom practice summer fallowing. And they are men of full average intelligence. Perhaps it is my misfortune, but it never occurs to me that a scientific question can be decided like a political one, by the majority of votes. If Mr. Geddes and his twenty neighbors are satisfied with their system of farming, I have no right to complain. But there are some of us who are looking for something better; we want larger crops, better stock, cleaner land, and greater profits. We want to keep some of our boys at home on the farm. We do not want *all* of them to be lawyers, doctors, merchants, engineers, contractors, mechanics, and manufacturers. We are invoking the aid of science, and never in the history of agriculture, probably, were so many men with trained intellects investigating the laws of husbandry. But Science does not give us recipes, she gives us principles, and leaves us to apply them. She will not help a lazy, shiftless, careless farmer. But to the real industrious, energetic, thoughtful, painstaking man, who is willing to learn and ready to practice, she is prepared to give hints which will add greatly to his comfort and profits.

Science does not say to such a man, "summer-fallow." This would be quackery. She does not say "raise clover and plow it under." She does not say "underdrain." She does not say "plow deeper." She does not say "plow shallower, or with this or that kind of furrow." She says: "be a man, think for yourself, study, observe, experiment. Help yourself and I will help you. Take hold; wake up; push ahead. Do not be satisfied with what you know, or with what your neighbors know. They will laugh at you. Heed them not. You may fail at first, but you shall prosper in the end. There are great improvements to be made. There is much to be learned."

The Deacon stopped me. "I don't see what you are driving at," he said, "Mr. Geddes is wise to call in his experienced neighbors, and ask them whether he had better summer-fallow or sow barley as a preparation for wheat. 'In the multitude of counselors there is wisdom.'"—"A Deacon should quote scripture correctly," I replied, "it is 'in multitude of counselors there is *safety*,' and I have no doubt these counselors gave Mr. Geddes very *safe* advice. 'Do as you have done,' they say, 'follow the old beaten track.'"

This is safe advice. I have no objection to it. All I have to say is, there is a better way. The system of farming recommended by Mr. Geddes, as I understand it, is not economical. We do not make the best use of our materials. We waste seed, labor, and food. We can not afford to raise beef, he tells us, and at the same time he recommends us to plow under our crops of clover. I have heard him say he does not sell straw, but scatters it around the yards by wagon-loads at a time; and then he laughs at me for saying a ton of clover hay (say 5 tons of green clover) is worth $9.64 for manure. And this, by the way, I never have said, all I say is this: *If* a ton of wheat-straw is worth $2.68 for manure, *then* a ton of clover hay, or five tons of green clover, is worth $9.64. I have never said that clover hay is worth $15.82 per ton for manure. All I have said is that *if* nitrogen, phosphoric acid, and potash, are worth so and so per pound, *then* clover hay contains enough of these valuable ingredients of plant-food, to make it worth $15.82.

Does Mr. Geddes buy artificial manures?—Do not some of his neighbors use them?—Thousands and tens of thousands of tons are sold, and I hope and believe more and more will be used every year. Mr. Geddes tells us that his neighbors are good and intelligent farmers. I can say the same thing of mine, I do not know a better farming section. I say nothing of the Deacon and myself, except that we are improving. But a mile or two away from us, there is as good land, and as good farmers as any in the state. These men have been buying superphosphate at $45 per ton, to sow on their wheat; and this winter one of them sold me choice early cut clover hay at $10 per ton, and the day I visited him, he had been scattering straw about the yards and sheds two feet thick, to get rid of it, and "make it into manure." This man has got a fine farm, and he is an intelligent, enterprising, and what we call a successful farmer. But I do not hesitate to say that such farming is not economical. I do not think the farmers in this fine section, with land worth from $125 to $200 per acre, average more than 125 bushels of potatoes per acre; 35 bushels shelled corn; 25 bushels of barley, and 20 bushels of wheat. Does the best town in Mr. Geddes's neighborhood *average* any more? and with such crops on such land, does a well educated, active, and industrious farmer get adequate compensation for his time, care, labor, and capital? If not, why not? My answer is *because our crops are not large enough per acre.* And I am happy to say that I have received hundreds of letters from farmers in different parts of the United States and Canada, telling me that my point is well taken.

Now how are we to get larger crops per acre? The atmosphere perhaps furnishes us all the carbonic acid which plants require; and the rains and dews furnish us a small quantity of nitrogen; but not nearly as much as we need to produce large crops. Nitrogen, phosphoric acid, potash, etc., are annually developed from the soil. The amount so furnished, varies greatly according to the character of the land. On light sandy soil it may not be sufficient to furnish food for more than a quarter of a ton of hay, or 5 bushels of wheat to the acre; or it may be sufficient on some soils to furnish food enough for a ton of hay, or 20 bushels of wheat an acre. Whatever the amount is, that is what I call the normal yield of the soil; cultivation may accelerate the development. It may procure us a larger quantity in a given time. A meadow which produces less that half a ton of hay to the acre, if plowed up, well worked, and seeded down again, may give us two tons to the acre. This is due in a good degree to the decomposition of the roots, which have been formed from the slowly developed matter in the soil for some years past. This is not the normal supply of plant-food.

In Mr. Lawes' experimental wheat field, the annual yield of wheat for over thirty years, without manure of any kind, and the crop of grain and straw all removed, has been about 15 bushels per acre. This is the normal yield of wheat on that soil, with two plowings each year, and hoeing between the drills, to keep the crop clean. I have used this well established fact to illustrate what Mr. Geddes calls my "pet theory of the advantages of raising, at long intervals, large crops of wheat by summer-fallowing." I hope the careful readers of the *Agriculturist* understand my views better than to limit this theory merely to summer-fallowing. That is only one of the means I have suggested. Raising clover, peas, mangels, turnips, mustard, rape, corn, oats, rye, buckwheat, and grass, and *feeding them out on the farm*, carefully saving and returning the manure, is just as much one of my "pet theories." The principle is the same. What I contend for is, that we must in some way get a greater accumulation of available plant-food in the soil, especially for our best paying crops, and those which require the largest amount of labor to the acre. There are but two ways of doing this; 1*st*. Buy the plant-food. This we can do in artificial fertilizers. The nitrogen in this form will cost us 20 to 30 cents per pound. We can also buy stable manure from the cities. We can also buy hay from such of our neighbors as are willing to sell, or bran, oilcake, grain, and other foods, and feed it out to cattle, sheep, and pigs. There are some who can get fish, sea-weed, swamp muck, etc. 2*nd*. We can get this accumulation of plant-food, by saving that which is annually developed from the soil. And it is right here that we need all the aid which science and experience can furnish us. It is the starting point of good farming. If you have a good, calcareous clayey soil like that of Mr. Lawes', which will produce 15 bushels of wheat per acre every year, I contend that it is poor farm-

ing to sow it to wheat, or barley, or oats, or corn every year, and sell all the produce. It would require less seed and less labor to raise a crop of 30 bushels every other year—and the land would be cleaner. You raise and sell just as much wheat in the one case as in the other. I do not say that by summer-fallowing you would be sure of getting the 30 bushels every other year, or if you summer-fallowed two years in succession, that you would get 45 bushels every third year. I have only used these figures to illustrate my meaning. What I contend for is, that we should raise fewer wheat crops, and either summer-fallow more, (on heavy soils), or raise more clover or other crops which are consumed on the farm. I want to raise just as much wheat as we do now; but I want fewer acres and larger profits. And I want more good beef, mutton, wool, pork, cheese, butter and milk into the bargain. I believe all this can be accomplished, and I do not think Mr. Geddes should oppose my plan unless he can suggest a better one. It is easy to say you can not afford to produce good beef in the state of New York, or to raise large crops, or that we can not make farming pay. It is certain if farming will not pay in this country, other business interests will not long prosper.

"But tell me," said the Deacon, "if those large crops of barley, which you say Mr. Lawes has raised for so many years on the same land with artificial manures, have not cost more than the crops raised on the same land without manure, or on the plots less liberally manured?"—"No, they have not—and if they had, this would be no evidence against my views; for I do not advocate growing grain crops every year on the same land. I think we can get manure cheaper than by buying artificial fertilizers."—"Well, never mind all that, answer my question."—"I will, sir. For 20 years in succession, the whole crop of grain and straw being removed each year, the plot without manure produced each year on the average 1,133 lbs. of barley, equal to 23¼ of our bushels per acre, and 11¾ cwts. of straw. The plot with 3½ cwts. of superphosphate per acre produced 1,439 lbs., or within one lb. of 30 of our bushels, per acre, and 13⅝ cwts. of straw. The plot with 3½ cwts. superphosphate and 275 lbs. nitrate of soda per acre, produced on the average 2,795 lbs., equal to 58¼ of our bushels per acre, and 30½ cwts. of straw. During the 20 years there has been removed in grain, straw, and chaff from each acre as follows:

No manure	48,080 lbs.
Superphosphate	58,600 lbs.
Nitrate of soda and superphosphate	124,310 lbs.

Mr. Lawes, in his lecture on "Scientific Agriculture with a View to Profit," gives the following figures of the cost of growing barley continuously on the same land with superphosphate and nitrate of soda:

	£	s	d	
275 lbs. nitrate of soda	£2	0s	0d	=about $13.50
2¼ cwts. superphosphates	13	9		
Sowing manure	1	6		
Rent, tithe, and rates	1	15	0	=about $25.00
Plowing		10	0	
Scarifying		3	0	
Harrowing		4	0	
Rolling		2	0	
Drilling		2	0	
3 bushels seed, @ 4s. 3d.		12	9	
Hoeing and weeding		7	0	
Harvesting		10	0	
Threshing and dressing		12	0	
Total cost	7	13	0	=about $38.50

The results of the three different plots will be about as follows, leaving out of consideration the extra cost of threshing the larger crop:

1. No Manure.

23¼ bushels barley, @ $1.25	$29 37
11¾ cwts. of straw, @ 25c	2 93
	$32 30
Expenses	25 00
Profit per acre	7 30

2. Superphosphate.

30 bushels barley, @ $1.25	$37 50
13⅝ cwts of straw, @ 25c	3 50
	$41 00
Expenses—about	30 00
Profit per acre	11 00

3. Superphosphate and Nitrate of Soda.

58¼ bushels of barley, @ $1.25	$72 81
30½ cwts. of straw, @ 25c	7 62
	$80 43
Expenses	38 50
Profit per acre	41 93

These are average results, extending over a period of 20 years. By selecting single years, I could make out a still stronger case. One year the yield of the plot quoted above as averaging 58¼ bushels per acre, gave over 75¾ bushels per acre, and three years later 77 bushels per acre.

I do not say that we can raise 77 bushels of barley per acre here. But I do say that we should furnish sufficient available plant-food to approximate very closely to the limit of climatic productiveness. I have several times grown over 50 bushels of barley per acre, and have never yet had my land too rich. Had it been richer, I think I should have had a heavier crop.

By referring to the *American Agriculturist*, of January last, page 14, it will be seen that Mr. Geddes got 34 bushels of barley, and 27½ bushels of Clawson wheat afterwards. His wheat on the summer-fallow, part Diehl and part Clawson, he thought, had it been all Clawson, would have been 50 bushels per acre. And he thinks this shows that it is better to grow barley than to summer-fallow. Perhaps it is. But it should be understood that I am not arguing in favor of summer-fallowing for wheat. I am simply desirous of showing that it is better to raise fewer grain crops, until we get our land rich enough to produce a higher yield per acre. I have sowed 15 acres of barley this spring on land manured last year for mangels. It would be very likely to grow 27½ bushels of Clawson wheat after the barley. But this does not satisfy me. And so, instead of sowing wheat after the barley, I have seeded it down with clover. I have another field of 17 acres, a clover sod, plowed last fall, and sown to barley this spring. This I have also seeded down with clover. My object is to get the land richer. I am practicing what I preach. I do not want, as a rule, to sow land to wheat that I do not think rich enough to produce, in a favorable season, 40 bushels of Diehl wheat per acre.

Sheep Shelters in Kansas and Virginia.

Notes of Successful Experience.

The experience of the past winter in keeping sheep on the western plains, has been of great value. It has shown that with proper protection and comfortable shelter, any breed of sheep—those even which require very great care in the east—may be kept with very little expense for feed. The open pasture is sufficient to keep them in fair condition during fine weather, and it is only when the occasional short storms prevail, that hay need be given to them. But the heavier breeds of sheep, that have been used to better fare than pasture alone, while they may be kept in ordinary condition on this fare, can be kept increasing in weight, and made to yield a heavier and better fleece, by the daily ration, in the winter, of a pint of corn per head. The experience on this point the past winter, of Mr. George Grant, of Victoria, in Ellis Co., Kansas, is very pertinent. This gentleman informs us that his flock of 7,000 sheep, consisting mainly of native ewes, with rams of pure Leicester, Lincoln, Cotswold, Southdown, Shropshire, and Oxforddown blood, and half-bred lambs, of last year, have passed through the winter very successfully, under the rational treatment given to them. The shelter or corral provided for them is a building with stone walls, covered with a peaked roof. It is square in shape, with sides about 570 feet long. A commodious house of two stories is built at one corner, for the shepherds. The corral drawn from a sketch furnished by Mr. Grant, is shown in the engraving (figure 1) given on the following page. The flock is brought into the corral every night, and is kept inside during stormy weather. At these times the sheep are furnished with hay, and a pint of crushed corn per head. At other times they are turned out to pasture in the morning, upon the prairie, and are brought back in the evening. As an experiment, a flock of 2,500 head has been kept separate from the rest, and each sheep of this flock has received a pint of crushed corn every night on their return from the pasture. The improvement in this flock has been marked, and as might have been expected, the extra feed has been profitably expended. Mr.

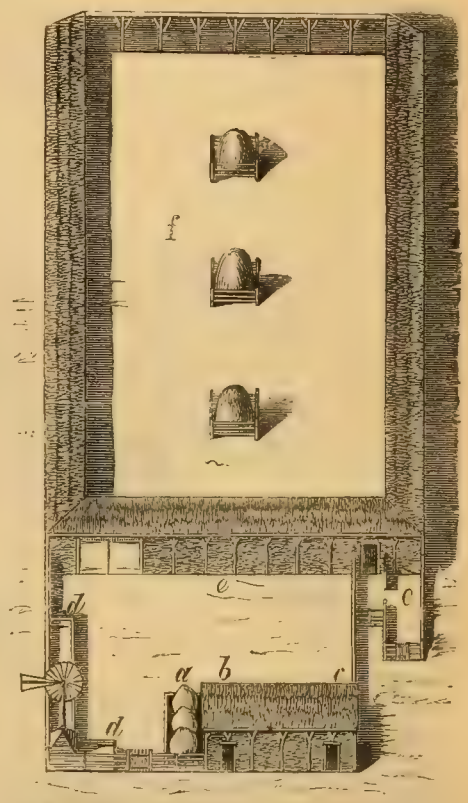


Fig. 2. SHEEP-SHEDS OF W. B. SHAW, SYRACUSE, KAS.

Grant's success has been so encouraging, that he is permitting his flock to enlarge by natural increase, until his extensive tract of land shall be well stocked.

Another enterprise in this direction, has been set on foot by Mr. W. B. Shaw, of Syracuse, which is about 200 miles south-west of Victoria, and near the eastern boundary of Colorado. In both these places the buffalo grass furnishes the chief pasturage, and the "blue joint" the hay. Mr. Shaw began with 220 sheep, a mixed flock of Cotswolds, Leicesters, Southdowns, and Merinos, which arrived on the ground in October last, and up to January 1st, grazed without interruption on the open prairie. From the first to the twenty-first of January, a succession of cold days with snow on the ground, kept the flock in the fold. During this time about 600 pounds of hay was fed daily,

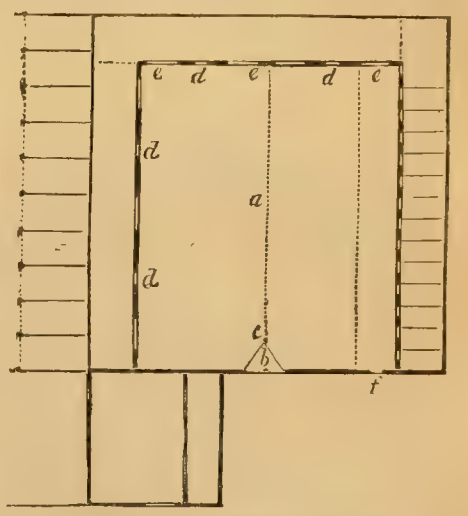


Fig. 3.—VIRGINIA SHEEP BUILDING.

which was an ample supply for the whole flock. At this period, too, the lambs began to appear, and three or four of them were lost, through inexperience rather than from the inclemency of the season. After January 21st, the sheep were again turned on to the pasture. Mr. Shaw's experience has been equally favorable with that of Mr. Grant. His shed is made of cotton-wood poles, and coarse hay

from the river bottom, and is built around an enclosure 200 feet long, by 100 feet wide. This shed is shown at fig. 2, from a drawing kindly furnished by Mr. Shaw. The stack yard for hay is seen at *a*, the horse barn at *b*; the poultry house at *c*; the water trough and pump, operated by a windmill, at *d*; the sheep fold at *e*; the feeding yard with hay stacks and racks, at *f*, and around the feeding yard

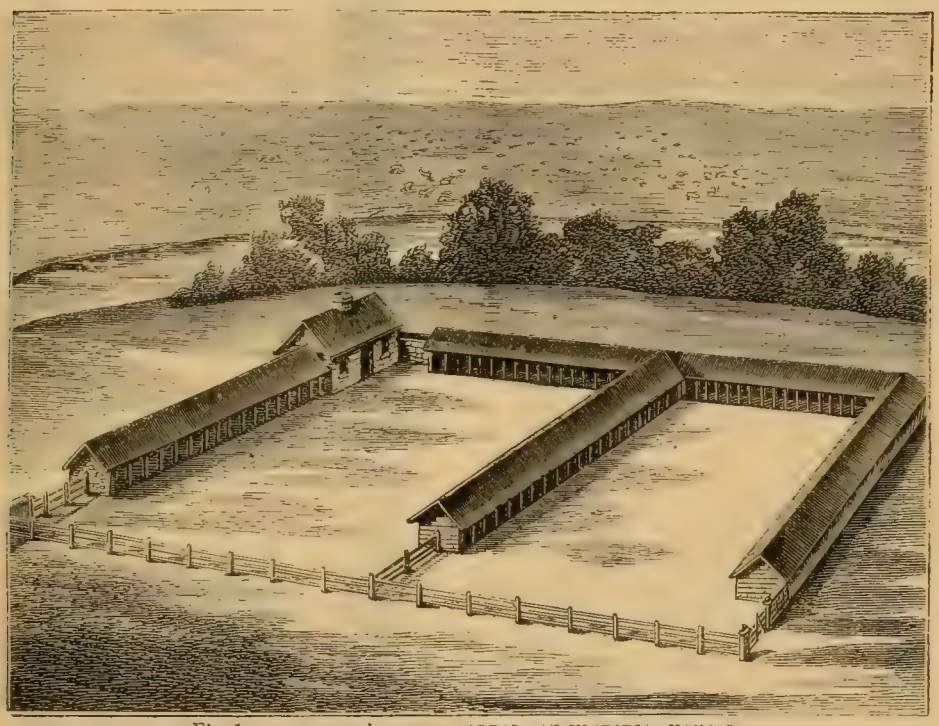
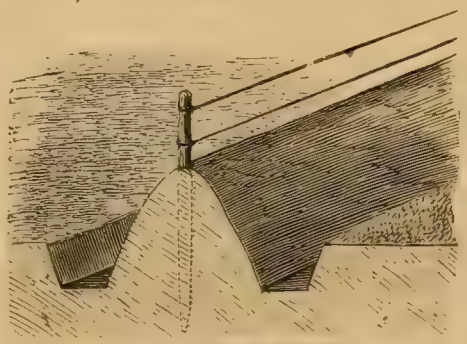


Fig. 1.—MR. GRANT'S SHEEP CORRAL, AT VICTORIA, KANSAS.

are sheds with a single roof sloping outwards. These instances show that those extensive plains, which stretch from western Nebraska and Kansas, across eastern Colorado to the mountains, are well adapted to sheep raising, from the ease and economy with which sheep may be reared upon them. We are, however, reminded by a correspondent from Virginia, of the facilities for the production of mutton and wool in that state, and much nearer the sea-board. In an article given in the *Agriculturist* last month, (May), he described something of the management of a flock of 300 sheep, and the facilities afforded by the climate and location, for raising and shipping early lambs to market. Now we have a description of his sheep barn, which possesses many conveniences, and which is shown in plan at fig. 3. The yard, *a*, is 100 feet square, divided by a hurdle fence, shown by the dotted lines, into as many portions as may be desired. The entrance is at *b*, where there is a gate hung upon a post, *c*, in such a way as to open or close each half of the yard. The yard is enclosed on three sides by a shed 10 feet high to the eaves, with a double roof. The ground floor, 7 feet high, is appropriated for sheep pens, and the three feet above for a hay loft. The shed is 12 feet wide, and has a row of separate pens 6 feet wide, upon the north side. On the other sides there are narrow doors for the sheep, seen at *d*, *d*, and sliding shutters, *e*, *e*, 8 feet long, and 3½ feet high, which are also used for entrances to the shed. The yard is closed at the front by a fence 10 feet high. There are no outside windows, and no doors but two, and only one of these, that at *f*, is locked from the outside, so that the turning of one key on the outside, secures the whole from trespassers. There is a second yard, 150 by 135 feet, upon the south side of the sheep yard, with an open shed facing the south, and divided into pens 9 feet deep, for cows or sheep, and a pig pen 35 feet square, at the south east of the sheep yard. These sheds are made of inch boards, nailed up and down upon the frame work, and the roof is of boards, with sufficient pitch to shed rain perfectly. With these descriptions of sheep sheds, and the knowledge that proper shelter is found absolutely necessary for the welfare of the sheep everywhere, those who are keeping sheep, or desiring to do so, will have no difficulty in making plans to meet their requirements in any part of our wide country.

A Fence not Worth Stealing.

We have several inquiries from the southern states for a fence that can not be stolen. It seems that in several parts of those states fences are considered a convenient source of firewood, and as a sort of common property. A correspondent writes that he has built three board-fences in as many years, and now has neither boards nor fences left of any of them. We take this to be an exceptional case, but to provide for such a state of affairs, the fence here described may be used. Posts are set in the ground, as for an ordinary fence, and several furrows are then plowed on each side toward the fence, until the earth is heaped up on the line. The earth is further loosened with the plow, and thrown up with the shovel, leaving a bank on the line of the fence, and a ditch on each side. Two No. 9 fence-wires are then stretched along the posts, making a fence that cattle can not get over or through, and that in part can not be burned, and in part can not be pulled up. If this does not meet the case, some modification of it that will occur to

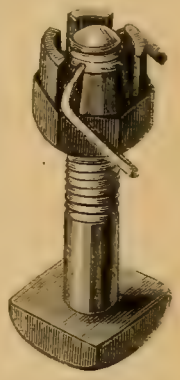


A BANK AND WIRE FENCE.

our correspondent, may be serviceable. The fence is shown in the accompanying illustration.

A New Lock Nut.

On a recent visit to the works of Messrs. Adriance, Platt & Co., Poughkeepsie, N. Y., the manufacturers of the well known Buckeye mowing and reaping machines, we were shown amongst other novelties, the lock nut here illustrated. This lock nut is manufactured specially by this firm for use upon their machines, which are not only made in the most perfect and serviceable manner, but by such careful devices as this, it is rendered well nigh impossible for them to get out of order, even in the hands of a careless farmer. The lock is of the simplest but most effective kind. The end of the screw is perforated with a small hole, and the nut is made with several openings or open slots in the upper part. When the nut is screwed tight, a piece of wire is put through the hole, necessarily passing through two of these openings in the nut; the ends of the wire are then bent so that it cannot slip out and the nut is perfectly locked. This close attention to the details of construction has made this machine a model of its class, reducing its weight and simplifying its mechanism until it is a mere skeleton of what it was years ago, but retaining everything of its strength and durability. One would think, viewing the newest mowers and reapers with all the improvements in material and mechanism they exhibit, that at last perfection in these machines has been reached; but when a "Buckeye of a dozen years ago is compared with the new "model machine" of to-day, and all the gradual improvements during those years are noted, it would seem that new surprises may yet be in store for the coming farmer. Certainly it would not be safe to say that skillful and enterprising manufacturers of agricultural machinery have as yet exhausted their inventive faculties.



LOCK NUT.

Ringing Hogs.

In 1870 there were over 25 million hogs in the United States, and the total value of the pork repre-

Fig. 1.—PINCERS AND RING.

sented by them is a very large sum. Anything, however small it may seem to be, that can operate to increase the yield of pork from all these hogs, is in the aggregate of great importance. Whatever can reduce the labor of managing and rearing a similar number of hogs every year, will be of great service to farmers. By pasturing hogs upon clover and grass, there is a great economy in feeding them and in raising pork, as they may in this way procure their own food with but little attention.

Fig. 2. OPEN. Fig. 3. CLOSED.

Unfortunately a hog or a pig is a difficult animal to manage, unless handled with skill. If made submissive, or rendered incapable of mischief, it is easy to manage them in a pasture, but otherwise a few hogs will destroy a pasture, or escape from it, in a few days. They are generally sub-

Fig. 4.—PIG HOLDER.

dued by putting rings in their snouts, a necessary operation, but one rarely done otherwise than in a

bungling or ineffective manner. When done quickly and well, it is almost painless to the animal, but as usually managed, the operation is made a tedious and painful one. An instantaneous method of inserting rings is shown in the accompanying illustration. The rings can not work out, while they prevent the animal from using its snout mischievously. The ring is shown open at fig. 2, and closed at fig. 3. It is placed in a pair of pincers, fig. 1, with which the sharpened points are instantly forced through the cartilage of the snout, and locked so that the ring can not work loose. The animal is held meantime by the holder, fig. 4, into the loop of which the upper jaw is inserted, and the harder the hog pulls backward, the more securely he is held. This ingenious, effective, and very useful contrivance is made by Chambers & Quinlan, of Decatur, Ill.

Storing Brewers' Grains.

The constant increase in the consumption of barley and other grain by brewers, makes the waste of material very noticeable. The beer takes away only a small portion of the grain used. The residue, known as brewer's grains, is a valuable article of food for stock, and should by no means be suffered to go to waste, though at present it is only partially

CELLAR AND HOUSE FOR STORING GRAINS.

utilized. We have seen the grains thrown out of country breweries in large quantities, and finally used as manure. In this case much of the nutriment they contain is wasted. The use by brewers of corn-meal and rice is increasing; these nutritive substances, where they are used, add considerably to the value of a given bulk of the grains. The chief difficulty experienced by those who feed brewer's grains is, that unless properly preserved, they rapidly sour and spoil, and during the summer, when brewing is active and grains most plentiful, they are not much in demand for feeding. But they may be very cheaply preserved in large quantities for many months. The most convenient method of effecting this, is to store them in a deep cellar or pit, walled up with stone and mortar, or cement. Where there is a basement barn, this pit may be made at one end of the building, and covered with a roof, as shown in the engraving, which represents a section of the building and the cellar or pit. The pit may be at least 12 feet deep, with a clean cemented floor. The grains are packed closely in the pit, until the level of the ground is nearly reached. Then a covering of closely fitted boards should be laid upon them, and plenty of straw, chaff, sawdust, or other such matter thrown over to exclude the air. The mass in this condition sours very slowly, but at the same time ammonia is formed in it, which corrects the acidity to a great extent, and it is found to be a very palatable food for cows and pigs, in the winter or summer. At some seasons grains may be purchased very cheaply. In a recent instance an Association of Farmers purchased several thousand bushels of grains, and stored them in the manner here described, disposing of them afterwards at cost to the members, and at a handsome advance to outsiders.

The Flushing of Drains.

In some cases the sediment deposited in drains, must be removed, or the tiles will choke in time and become useless. This deposit may generally be removed, and the drains cleared by flushing them. In all systems of drains there should be inspection wells, or places called silt boxes, for the collection of the sediment. These are earthen pipes or wooden boxes, sunk from the surface a few inches below the level of the drains, as shown in the accompanying illustrations. These are closely covered to prevent access of anything that might obstruct the drains; the drain-pipe enters the box at one side, and issues from it on the opposite side. To remove sediment that gathers in these boxes or wells, a sand pump or a box-auger is used, such as is shown at figure 1. By boring into the sediment in the same manner that an earth auger is used to bore post holes, the sand or mud enters the box of the auger, and is drawn out. If round earthen pipe is used for the wells, the auger may be made to fit it closely. Then when it is desired to flush the drains, the auger is put down to the bottom of the well, and left there. The drain is thus stopped, and if this is done when the water is in full flow, it is backed up until the drain-pipes are all filled, and the water rises in the soil. When a sufficient quantity has accumulated to cause a rush of water, the obstacle is removed, and an active flow through the drains results, which carries the sediment along with it, and discharges it at the outlet. There are various ways of stopping up the drains for this purpose. For square wooden boxes, solid wooden plugs may be used, as in fig. 2, or if the wells are round, a round plug may be fitted to the drain, which operates as a water cock; this can be opened or closed, as in fig. 3; or the plug can be raised or depressed, shutting or opening the drain, as in figure 4.

Fig. 1.

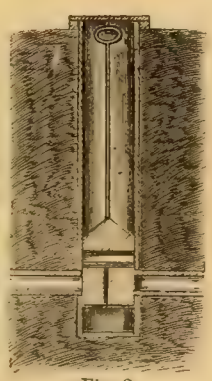


Fig. 2.

Dipping Sheep.

The dipping of sheep in spring, for the purpose of preventing and curing scab, is a practice that should never be neglected. If only to prevent or cure this troublesome disease, it would be indispensable; but it is otherwise serviceable, as a dip of a proper kind tends to promote the health of the skin, and to remedy the irritation so usual at the commencement of the warm season. Such a dip cleanses the skin from the accumulations of yolk and other secretions, which have gathered during the growth of the fleece, and thus is beneficial to the health of the sheep, and consequently to the quality and quantity of the wool. Furthermore one of the most troublesome parasites to which sheep are subject, is the tick, and this insect with its eggs, which are laid in the wool, may be destroyed by the use of a proper dip at a proper temperature. There are various compounds for dipping purposes, that are unobjectionable, but all those which contain arsenic should be avoided. They are under certain circumstances injurious to the sheep, and have often seriously poisoned those who handled them, especially if they had scratches or cuts upon their hands or arms. The carbolic dip is perfectly safe, as is also that made with tobacco and sulphur. The last mentioned dip is generally used by the large sheep owners on the plains; one of these uses 20 lbs. of cheap plug tobacco, and 5 pounds of sulphur, to 100 gallons of water. The tobacco is infused in hot water, and the liquor drawn off into a properly prepared tank, when the sulphur in fine powder is stirred into it. He dips every sheep immediately after shearing by plunging it into the bath for two minutes; it is then released into a draining pen, the floor of which drains into the dipping vat. The temperature of the dip, by additions of hot liquor, is kept up to 120°, so that the ticks and their eggs may be destroyed. This is rather severe upon the sheep, but only for a short time, and no evil effects have in any case followed this hot bath. The sheep are driven one by one along a fenced path, to the brink of the dipping tank, and are pushed into it, plunging at once to the bottom over head and ears. Some of the liquor gets into the noses of the sheep, and causes them to stagger about for a short time after they come out, but this is found to be an excellent remedy for those troubled with catarrh or grubs in the head. The cost of the dip is two cents per sheep, and the estimated profit resulting from the two dippings given each season, in extra

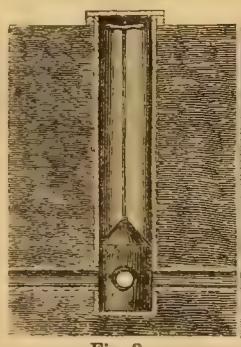


Fig. 3.

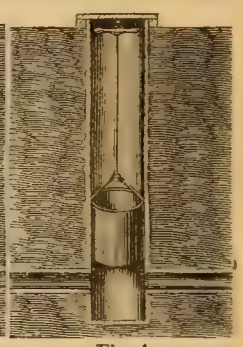


Fig. 4.

value of wool alone, is 20 cents per sheep. The sufferings of sheep and lambs from ticks alone, render it very desirable that every animal should be dipped twice each year; that is immediately after shearing, and again before winter. In small flocks, where there is no scab, ticks are partly banished by dipping the lambs only. The ticks congregate upon the lambs, leaving the newly shorn sheep, upon which only the eggs are left. But to make a perfect clearance of eggs as well as ticks, both sheep and lambs should be dipped. A dipping tub for use with small flocks, may easily be made of half a hogshead, boarding up each side, as shown in the engraving. The spaces boarded off, may be

A TUB ARRANGED FOR DIPPING SHEEP.

filled with clean gravel, and thus reduce the quantity of liquor needed. Instead of this tub a large trough, such as is used for scalding hogs, will answer. At one side of the tub is a sloping table of boards, upon which, after having been dipped in the manner shown in the engraving, the sheep is laid, and the excess of liquor squeezed out. In this way, if everything is properly prepared, 20 sheep may easily be dipped in an hour, or if there is sufficient help to bring up the sheep, one may be dipped every minute. A barrel of hot dip should be kept near by, to replenish the tub. This matter has been often referred to, but the almost universal prevalence of the tick, and the serious annoyance it causes to both sheep and lambs, which is really a loss in wool and mutton, of thousands of dollars yearly to farmers, makes it necessary to again present it at this seasonable period, and urge its observance upon all, whether their sheep may be many or few.

The Shooting Nuisance.

With the return of summer days and singing birds, comes that chronic nuisance, the callow sportsman with dog and gun, to hunt birds and astonish the natives with his prowess and the smell of gunpowder. He has none of the instincts of sportsmen, to whom we are indebted mainly for our game laws, and for the fines and penalities that are laid upon their willful violators. The chap we have in mind, is generally an idle, ignorant vagabond from the city, who wants the fame of a mighty hunter, and so dresses in sporting jacket and long-legged boots, invests in shot-guns and metallic powder flasks, in setter dogs and whiskey. He can hardly tell one bird from another, and is more likely to shoot domestic ducks and geese, than the wild water-fowl that visit secluded spots at this season. He shoots birds upon the nests, birds feeding their young, and all birds alike, whether they are the farmer's friends or not. This great nuisance, which was formerly confined mainly to the suburban districts, is now widely scattered almost everywhere, like thistle-down along the lines of our railroads. Every depot far inland is haunted with these verdant and downy youth, who come to kill and to destroy. They by no means confine their destruction to wild animals. They stroll over your farm with as much freedom as if they owned it, shoot chickens in the absence of woodcock and quail, and broil them under your nose, worrying with their dogs your sheep and poultry, throw down your fences in digging out rabbits and woodchucks, shoot into your notices to sportsmen, or tear them down, run over the growing crops, and if interfered with, treat you to the foulest slang and curses of the grog shops. This is a great evil, and extends much beyond the personal inconvenience of the farmers, that are most exposed to the depredations of these vagabonds. They greatly reduce the number of birds, and so multiply insects that prey upon our crops, and reduce the profit of our gardens and fields. It is settled, so far as anything can be, by the studies of men best acquainted with the habits of these birds, that almost all of them at some season of the year, live largely upon insects. They are the conservative force in nature, designed to keep insect life in check. If the birds eat some fruit, they save a great deal more, by devouring the various caterpillars and "worms" that prey upon the bark and leaves of fruit trees, and upon the fruits themselves. It is only in exceptional years that we are able to get fair fruit in the older parts of the country, where there has been the greatest destruction of birds, and where insects most abound. Our finest displays of fruit come from the newer states, where there are fewer insects. The promiscuous slaughter of birds, so prevalent in the early summer, is a nuisance that ought to be abated. We need more stringent legislation, and a better enforcement of the laws against transgressors. With very few exceptions the birds should be protected from early spring to autumn. They are the farmer's best friends.

Curing Green Fodder.

Important Experiments.

Experiments in preparing and feeding fodder of various kinds are being made in France and Germany, most of which are of great value; their object is to economize the use of cattle food. In almost every department of industry it is the savings in labor and material that are cheapening the cost of production, and at the same time increasing the profits of the producers. In every form of agriculture there is a vast scope for saving in both labor and materials. Our method of feeding stock is very wasteful; the greater part of the fodder fed every winter is expended in merely keeping the cattle alive. A loss of weight or condition in all kinds of stock equal to from 10 to 60 per cent is suffered every winter. The extremes show the averages of the best and poorest keeping. There is no necessity for this; stock may be kept increasing in weight during the winter if the fodder is of the right kind and the stock is properly housed and protected. The feeding of poor unpalatable fodder is the chief cause of this loss. The appetite needs to be stimulated at the season when the greatest draft is made upon the physical condition of the animal; and to meet this need there must not only be palatable or enticing food, but there must be plenty of it. Corn fodder is largely depended upon as food for stock over a great extent of country, and its use might be made well nigh universal, as no forage plant is so easily grown as corn. Could it be preserved fresh and green for six months or more, instead of curing it and using it dry, its value would be greatly increased. That it may be so preserved has been shown by experiment, and the process is claimed to be easy, and very profitable. A correspondent in Hungary gave us his own experience some time ago, (see *Agriculturist* for Aug. 1874). Of late years a great number of French, Belgian, and German farmers have adopted the plan, and some extensive stock-feeders have used it largely with the most favorable results. Several communications by prominent farmers and professors of agriculture in farm schools, have been made to the *Journal of Practical Agriculture*, of Paris, from which the following facts have been condensed, and by the aid of the illustrations, the methods in use, with the cost, may be learned. In figures 1, 2, and 3, are shown the pits or *silos*, as they are filled with the cut corn-fodder, then covered with earth and pressed down with its weight, and finally as the cut fodder has shrunk through fermentation to less than half its original bulk. These pits are about 75 feet long, 9 feet wide above, 6 feet wide at the bottom, and 6 feet deep. The sides and ends are built up of masonry laid in cement. In these pits the corn-stalks are laid evenly with care in layers of about 8 inches thick, after having been cut and exposed to the sun for two or three days. During this time the stalks lose by exposure to the sun two-fifths of their weight when first cut. A quantity of salt is scattered over every layer equal to about 66 pounds for each pit. The three pits hold about 80 tons, (75,000 kilos), of green fodder. The fodder is heaped up as shown in fig. 1, to a hight of 6 feet above the surface of the ground, and then covered with earth to a thickness of two or three feet. On the 14th of September, 1872, this work was finished. On the 15th of April following, one pit was opened and the fodder was found in perfect

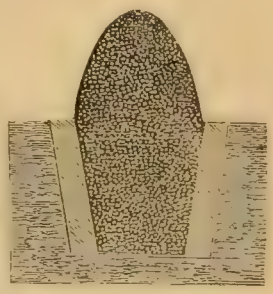


Fig. 1.—PIT BEFORE COVERING.

Fig. 2.—PIT AFTER COVERING.

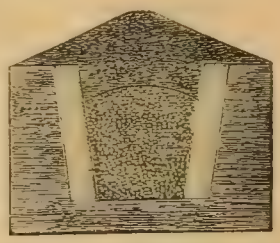


Fig. 3.—PIT AFTER SIX MONTHS.

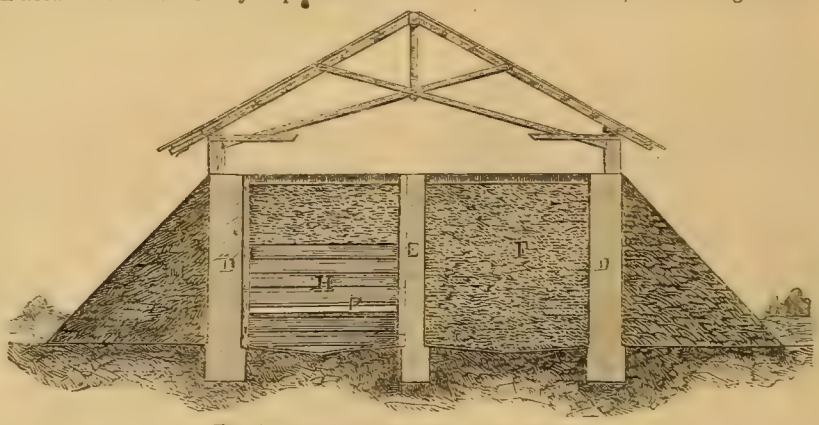


Fig. 4.—END VIEW OF PIT ABOVE GROUND.

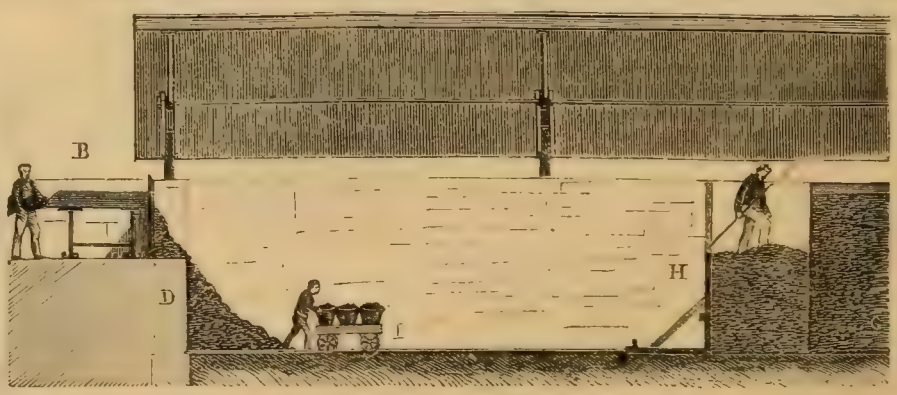


Fig. 5.—SIDE VIEW OF PIT BEING FILLED.

condition except for an inch or two upon the surface and the sides, where it was black and decayed. Its color was yellow, its odor agreeable, but the stalks had lost all their sweetness, and had acquired some degree of acidity. Twenty-four beeves were then fed about 900 lbs. daily of the preserved fodder, or nearly 40 lbs. per head on the average, which was equal to about 60 lbs. of fresh green fodder. The fodder was eaten with great relish, and only some portions of the harder stalks were left; the corn having been cut when ripe, and having been of a large growing variety known as Giant Maize, or *Zea Caragua*. The second pit was consumed July 3d, having been preserved equally well with the first. The third was not opened until the 20th of April, 1874, 18 months after covering. The fodder was in as good order as that from the other pits, excepting that the discolored and decayed layer was somewhat thicker in this pit than in the others; a result attributed in a great degree to the gravelly and porous character of the covering earth, the preservation being due solely to the exclusion of air. In this instance the fodder was preserved whole, and the cost of cutting avoided. But when the fodder has to be cut for final use, it has been found an economy to cut it before it is stored. This system has been adopted by M. Piret, the manager of a large estate owned by M. A. Houette, at Bleneau, in Belgium. From his statement we find that he made a small experiment in 1868 which was perfectly successful, the cut fodder being withdrawn from the pit in 1869 in excellent condition. In 1870 two pits of masonry were erected above ground, protected at the sides only by banks of earth. These were found equally serviceable with those sunk below the surface, and much more convenient. Following the statement of this gentleman closely, we learn that by the aid of about 450 lbs. of superphosphate of lime per acre, he has obtained on fairly good soil 75 tons per acre of green fodder, although the average of his crop was not more than 45 tons per acre; 250 tons of this was cut by a fodder cutter driven by horse-power, cutting two tons per hour, and stored in the pits as follows. The pit was built as shown in fig. 4, which represents the section, a dividing wall in the center separating it into two parts. The cut fodder falling into the pit was carried in baskets upon a truck on a portable railway to the end of the pit, where it was packed away in sections formed by a movable partition and trampled down tightly, salt at the rate of about 2 pounds to the ton of fodder being added. This pit is seen in fig. 5, which represents it in longitudinal section, and in fig. 6, which shows it in plan, and in which one division is seen filled, and the other in course of filling. When the pits are filled, the fodder is covered with a layer of fine clay 9 inches thick, well beaten down. In these figures the parts are shown by the following letters: *B* is the fodder cutter; *C* the rail track; *D* the exterior walls; *E* the division wall; *F* the filled compartment; *G* that in course of filling; *H* the movable partition with a transverse bar, *P*, which holds it in position; *I* the truck. The pit is shown in fig. 4, as covered with a roof of boards as protection from the weather, a measure of economy strongly recommended by M. Piret. In this figure the covering of clay is shown on the top of the fodder. This is beaten down frequently, as it may become cracked or disturbed by the settlement of the mass beneath.

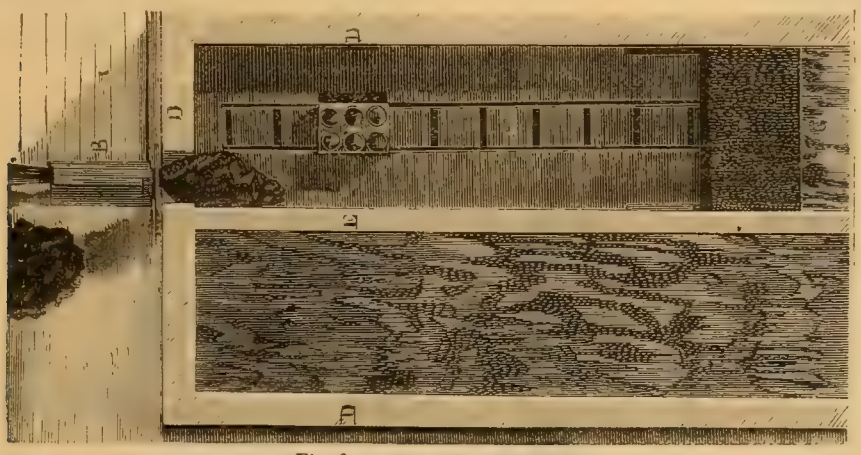


Fig. 6.—GROUND PLAN OF PIT.

The cost of the process here described is represented as being about $3 per ton, including the cutting, carrying, curing, and feeding of a crop equal to nearly 50 tons per acre of green fodder, (50,000 kilos per hectare). This enormous yield appears almost incredible to us, being a ton to less than 4 square rods, still we cannot doubt but such a yield is not only frequent, but that it is sometimes surpassed. It goes to show that in the cultivation and use of this our most common crop, we come far short of the possible yield, notwithstanding our favorable climate and the necessity of every available economy to cheapen or increase its production.

Log Drains.

"A Subscriber" in Texas asks for a method of making drains with logs, where there are neither tiles nor stone to be procured. In such a case we suggest a plan which is illustrated by the accompanying engravings. The ditches are dug in the usual manner, and the logs are placed in the bottom in such a way, as to leave a water-channel between them. In fig. 2 the bottom log is split, and each half is laid closely against the side of the ditch, so that the current can not wear it down, and cause the earth to fall in. The side logs are kept in place by the pressure of the top log. Brush is laid upon the logs and trodden down, and earth is thrown upon it, until the ditch is full. Such drains may be expected to last several years, after which it will pay to make more permanent ones.

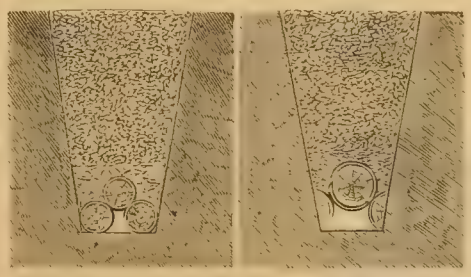


Fig. 1.—DRAIN OF WHOLE. Fig. 2.—OF SPLIT LOGS.

WHAT IS THE MOST PROFITABLE?—Inquiries are frequently made as to which is the most profitable branch of farming. It depends on several contingencies. In some places corn-growing and pork-raising, in others wool-growing, and in others dairying are steadily profitable one year with another. Where circumstances, such as rich corn land, healthful dry pastures, or abundant grass, with pure water, favor one or the other of these specialties, it is best to fall into them and keep to them. But for general purposes special crops or employments are rarely suitable, and mixed farming is the best reliance. This implies the culture of roots, grass, and grain, chiefly for feeding to the stock, and only partly for sale. The aim must be to distribute the produce so that a good portion comes back to the soil as manure, and the soil is kept improving constantly in fertility and freedom from weeds. Then immediate advantage can be taken of any exceptional condition of things, and if grain does not pay, meat and wool may be made, and if grain happens to be high, it may be sold, and some other cheaper feed be bought to replace it. A sharp farmer who has some capital, and can turn about at a short notice, will never be caught in a poor year, without at least an average profit from his business.

Agricultural Steam Engines.

The employment of steam upon the farm, is yet in its infancy. In the mechanic arts there is scarcely any thing produced without the employment of steam as the motive power; it is strange that in agriculture, the industry which employs more laborers and more capital than any other, the employment of steam should be very exceptional and rare. Horse-power is almost the only dependence of the farmer; but it is not so cheap as steam. It has been urged that if steam engines are used upon farms, the horses will stand idle, and the breeding of these animals become unprofitable. The same argument was strongly urged within the memory of many of our readers, as an objection against railroads. It was said that horses would become useless for want of work. Experience has shown that the wonderful expansion of the railroad system has so stimulated every industry, that horses are in greater demand than ever before, and in some countries their exportation is forbidden by law. The same effect must necessarily follow the cheapening of labor on the farm, by the use of steam. If the threshing, cutting and preparing of feed, and other stationary work of the farm is done by steam-power, there will be more time in which to plow and harrow, and more land can be brought under cultivation, and this will set in motion more work again for horses, as well as steam engines in other ways.

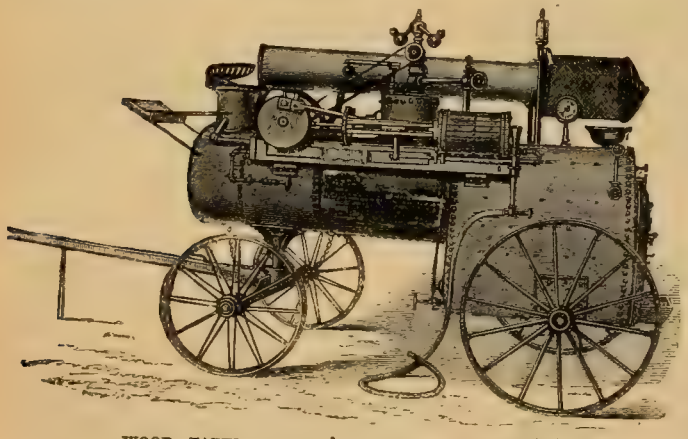
Steam-power is cheaper in its first cost than horse-power. The power of a dozen horses can be purchased for $1,200, and it practically lasts indefinitely; never tires, never stops for sickness, and never dies; besides this, and it is a most important consideration, it only consumes while it is working. The food and drink of a 4-horse-power steam-engine, which will do the work of more than 4 horses, consists of 200 pounds of coal, and 200 gallons of water daily. The cost of such an engine and boiler complete, is about $700, at least that is the price at which the portable engine, such as we here illustrate, can be procured. A 10-horse-power engine of the same kind, costs $1,200. This is much less than the actual value of a corresponding force of horses. The engraving represents a new and greatly improved portable engine, by Messrs. Wood, Taber & Morse, of Eaton, Madison Co., N. Y., made expressly for farm work. These engines are of two sizes, and called the "Rubicon," and the "Hercules." These names have been chosen to avoid the uncertainty which arises from the common denominations of "horse-powers by different makers"; each of these two kinds of engines being all of exact stated sizes and dimensions. The Rubicon is intended to drive a separator to the utmost capacity of one gang of men in handling the grain and straw; the Hercules will do double that work. This is under moderate steam pressure, and is not the limit of their capacity by any means. The cost of the first is $950, and that of the latter $1,100. These engines are complete with strong but light trucks, smoke pipe, spark arrester, automatic lubricator, and every modern improvement that can be advantageously combined with them. For threshing, cutting and steaming feed, cutting wood, and doing the general mechanical work of the farm, hoisting, loading, or unloading, there can be no cheaper nor more effective power than this.

New Tanning Plants.

Every now and then the papers have an account of some new and wonderful natural product; these phenomenal things were formerly all accredited to California, but of late Colorado and other of the newer states and territories come in for their share. When we see a newspaper article showing forth the wonders of a new forage plant, or one that is useful in dyeing, or in some other way, we take pains to trace the matter up, generally with the result of finding that the marvellous story is told of some old and well known plant, and that we have another instance of the general inaccuracy of newspaper science. Within a few months there has been much said about tanning plants; one of these, the Nebraska tanning plant, turned out to be *Polygonum amphibium*, a well known species of smartweed, and instead of being confined to a few localities in Nebraska, is very common from New England westward, as well as in Europe; so we fear that the company formed for gathering and baling the plant in Nebraska, will hardly have a monopoly of the article. Then Nevada presented its claims to having a valuable tanning plant, and this, upon being followed up, proved to be much more interesting than the other; we found it to be a plant quite unknown to the majority of our readers, and one of the most curious of our native plants. When the specimens, kindly furnished by S. T. Heath, Washoe Co., Nevada, came to hand, we were glad to see an old acquaintance made in botanizing across the country from Texas to the Pacific—*Ephedra antisiphyllitica*. Aside from any economical value they may have, the Ephedras are exceedingly interesting plants, being in structure and habit quite unlike any other natives; they belong to a small family, the *Gnetaceæ*, which is near to the pine-family; it is not necessary for us to minutely describe their structure, as their external appearance and habit is such as to allow them to be recognized at sight. There are some 15 species in different countries, the two or three found here being low shrubs, two or three feet high, with clustered branches, which are jointed, and have sheaths at the joints, giving the plants much the appearance of a branching horse-tail or scouring-rush, (*Equisetum*), the sheaths sometimes on flowerless stems, developed as at *e* in the engraving, are all the leaves the plant has, the green stems serving as foliage; the staminate and pistillate flowers are on separate plants, both kinds being in cone-like aments; *b* shows a staminate branch, and *c* a pistillate one about the natural size, and at *d* is an enlarged staminate ament, consisting of overlapping scales, from beneath which the stamens protrude; the fertile one, *a*, bears one or two fruits or seeds, which present a structure of much interest to the botanist. The plants are resinous and astringent to the taste, and the one in question is used in localities where it grows as a medicine, and as a substitute for tea. The plant grows in large clumps, and the dense mass of peculiar yellowish-green leafless stems, if not beautiful, would at least produce a novel effect in gardening, and wherever it would be hardy, it is worth growing for its oddity. The European species have the common name of Shrubby Horse-tail; the Mexicans call ours *Tepopote*, but the botanical name—*Ephedra*, is quite as handy as either. Animals are fond of browsing upon the plant, but probably more for a change than for any considerable nourishment it may afford. Its value as a tanning material needs to be carefully examined; that it will tan skins very completely there is no doubt; Mr. Heath sends us a piece of buckskin tanned with the plant, which is of a light pleasing color. Should it be found of sufficient value, as compared with other tanning materials, an extract could be prepared, as the stems of the plants are too bulky for distant transportation.

"TANNING PLANT."—(*Ephedra antisiphyllitica.*)

a, fertile ament; *b*, staminate branch; *c*, pistillate branch; *d*, staminate ament; *e*, flowerless stem.



WOOD, TABER & MORSE'S ENGINE.—(*See page* 223.)

The Chinese or Beefsteak Saxifrage.

The Chinese Saxifrage is an illustration of the manner in which the popularity of a plant is affected by fashion; this was introduced from China over 100 years ago, and has been found here and there among old-fashioned house-plants, but regarded as too common to form a part of the florist's stock. A few years ago hanging baskets came into use for the cultivation of flowers, their popularity yearly increasing, and this neglected Saxifrage being found to be a most useful basket-plant, it is now raised in quantities by the florists, and is to be had almost everywhere among the dealers. The plant is so different in general appearance from other Saxifrages, that one who did not study it botanically, would not think it belonged with them. It is a perennial with leaves, which are all clustered at the root on long hairy stalks, two or three inches broad, round heart-shaped, or kidney-shaped, and scolloped on the margin; they are thickish, purple on the under side, with the somewhat hairy upper surface marked with broad irregular whitish stripes along the veins, from the base to the edge, which, contrasting with the light green, give it a handsomely variegated appearance. Well established plants flower freely, throwing up a flower stalk a foot or more high, with the flowers arranged in a loose pyramidal cluster; the flowers themselves are small and not very showy, but when closely examined, are found to be exceedingly neat and

CHINESE SAXIFRAGE—PLANT WITH RUNNERS.

pretty; the flower is made very irregular by having two of its petals thrice the length of the others, and hanging directly downwards, while the other three are erect; the long petals are white, and the short ones a delicate pink, with some darker spots of the same, and an orange-colored spot at the base of each. The engraving shows very correctly the shape of the flowers, and their arrangement in the cluster. The plant propagates itself in the same manner as the strawberry, by throwing off long, weak stems, which form a bud at the end, which develops into a new plant. These runners are in botanical language *sarments*, hence this species is named *Saxifraga sarmentosa*; the runners are very much more slender than in the strawberry, being exceedingly fine and thread-like. The buds formed on the runners, when they come in contract with the soil, at once take root, but when the plant is grown in a suspended basket or vase, being unable to reach any soil, they grow to a considerable size, being fed by the old plant, and at length put out runners of their own, and frequently this will be repeated several times, presenting a very interesting appearance. This manner of growth is illustrated in the engraving given on the preceding page; about half size. The plant is not only suited for hanging baskets by its pendulous habit, but by its hardiness, is useful for both in-door and out-door baskets; many plants otherwise well adapted for baskets, are very delicate, and do not flourish under the neglect to which out-door baskets are often subjected, and it stands occasional drying out, as well as sudden cold or even frosts. It is hardy in England, and would probably be so here south of New York. A few years ago we left it out upon a rock-work, and the winter happening to be an unusually mild one, it survived. Like many other plants that have been a long time in cultivation as house-plants, this has received a number of common names; that of "Beefsteak Saxifrage," or "Beefsteak Geranium," would appear to have been given on account of the color of the under side of the leaves; "Strawberry Geranium," has reference to its running like the strawberry; "Wandering Jew," and "Sailor-plant," indicate its traveling propensities, and "Mother of Thousands," its prolific character; besides these there are other popular names not just now recalled. A very handsomely marked plant, sold as *S. tricolor*, may be a variety of this; it has a similar habit, and its leaves finely marked with white, green, and red, but the markings are not permanent.

CHINESE OR BEEFSTEAK SAXIFRAGE.—(*Saxifraga sarmentosa.*)

THICK-LEAVED PLANTS.—(*Crassula cordata.*)

Succulents—Thick-Leaved Plants.

Horticulturists include in the class of succulents, plants belonging to very different families; the French in *plantes grasses*—fat or fleshy plants—do the same; any classification founded upon one character only, brings together very unlike plants, and we find the succulents are as miscellaneous a lot, as would be a group of red-berried plants. So we find in the catalogues Cactuses, Agaves, Yuccas, Euphorbias, Sedums, and others, which are more unlike botanically, than are roses and cabbages, classed as succulents. Our intention is to say a word, not about all the succulents, but only about some plants of the proper thick-leaved family, the *Crassulaceæ*, better known perhaps as the Stonecrop Family. The botanical name of the family is from that of one of its genera *Crassula*, which is named from the Latin word *crassus*, thick, and it is not stretching the use of words, to call it the "Thick-leaved Family." Those who have not given especial thought to the matter, can not be aware of what a wonderful organ the leaf is, and how beautifully it is arranged to meet the requirements of the plant in different climates and situations. The leaves of plants generally are covered with a thin, impervious skin, or epidermis, in which there are innumerable little mouths (*stomata*) or breathing holes, so arranged that they open or close, according to the state of the atmosphere; if the air is very dry, they close up tight, and thus prevent undue evaporation. The plants of hot and dry countries have their leaves especially arranged to prevent evaporation for the greater part of the time; they are thick and succulent, and hold during the dry season the moisture they have taken up during the brief season of rains; a microscopic examination of the leaves of the Aloes and Euphorbias of the sunburnt plains of Africa, or the Cactuses of the arid table lands of the interior of our own continent, shows how admirably they are fortified to stand a siege of drouth. When we examine the leaves of the thick-leaved plants, which are not rare in the temperate regions, and find that they have a similar provision against evaporation, and are in some cases quite as well provided against the drouth, as those in the rainless regions, we may think that there is a mistake. But we also

find that the plants of temperate regions, with their leaves so admirably arranged to resist drouth, in their wild state grow upon barren rocks, on old walls, and on sandy plains, where plants with ordinary foliage would soon perish. The point to which we would direct these remarks is this: that plants so well provided to exist, and even flourish under natural conditions unfavorable to growth, will do so equally well in the hot and dry artificial climate that we make in our houses. There would be much more cultivation of plants in rooms, if people in houses heated by furnaces and stoves, would not persist in their attempts to grow roses, carnations, and camellias, which, nine cases in ten, end in disappointment. The thick-leaved plants afford variety and beauty of foliage, and many of them are pleasing, and others really brilliant when in bloom. We do not say that we should prefer these to roses and carnations, but that success with these is preferable to failure with the others. The merits of some genera of this family have been set forth in our columns by Mr. Chas. H. Hovey, of Cambridgeport, Mass., whose article in August last on Sempervivums, and that in June last on Echeverias, gives an account of the most desirable species in these genera. We may mention that the large *Echeveria retusa floribunda*, then figured, has proved an admirable winter-flowering species, and a most brilliant house-plant. Among the Sedums, or Stone-crops, are white, pink, and yellow-flowered species, with great diversity of habit, excellent hardy border-plants, and some specially useful for basket-culture; nearly all are summer-flowering, but the Japanese *S. Sieboldii* is a fine house-plant, whether the plain-leaved, or its variegated form. Turning to the genus *Crassula*, which gives its name to the family, we find the species, being mostly African, are not hardy, but they furnish a number of capital house-plants, all with great powers of resisting the effects of dry air. *Crassula coccinea* is a very old house-plant, but it would be difficult to find a more brilliant cluster of scarlet flowers than it bears; this is sometimes called *Rochea; Crassula lactea*, in the catalogues incorrectly as C. perfoliata, produces pyramidal clusters of small pure white flowers, and is grown by some florists to supply cut flowers. *Crassula cordata* is a remarkably free flowering species, which has less compact clusters than the one last named, and its flowers are slightly purplish, and very neat; the engraving (p. 225) shows the flowers and foliage of the natural size; it has kept in flower with us all winter. This plant seems bent on propagating itself; wherever a stem touches the ground it takes root, and if kept in a moist atmosphere, rootlets are thrown out from the stem into the air; more than this, there is often produced in the place of a flower a minute bud, which, if allowed to remain, develops several little leaves, and finally drops, and if it falls upon the earth, takes root. All of the tender plants of this family may be used as border plants in summer, where their often striking form and color of foliage will be attractive; some, such as the Echeverias, are used in forming ornamental designs, but this requires a greater number of plants than most persons can afford. Our principal object is to call the attention of those who are unable to grow other house-plants, to the variety offered by these of the Crassula family; a collection of Echeverias, Semperviums, Crassulas, and Rocheas, is beautiful for the foliage alone, and besides this, many have exceedingly showy flowers, and present a strong claim to popular favor.

Tender Climbing Roses.

Nothing in the horticulture of the southern states is more likely to strike the traveler from the north than the profusion of climbing roses. Lamarque and other climbers, which he has seen in his colder climate attaining perfection only under glass, there festoon the houses in both city and country, and for the greater part of the year produce a wealth of the choicest flowers. With proper management these tender climbers may be made to give much better satisfaction in northern localities than they usually do, and all rose-growers will be thankful for the following bit of experience from B. Shaw, Esq., Williamsport, Pa., who says:

"I have planted around a bay-window, under which there are three cellar windows, 'Lamarque,' 'Marechal Niel,' and 'Gloire de Dijon.' The plants are too large to bury, some of them being 18 feet high, and I protect them in the following manner: When it is time to bury other tender roses, I take out the cellar windows and bend down the roses (which are planted directly in front of them), and draw them into the cellar; I then take strips of cloth or leather and tack the rose-stems to the under side of the floor timbers; this puts them entirely out of the way, and at the same time protects them from being broken. To protect the root, and at the same time to close up the window, I make a box as large, or larger, than the cellar window, using the sash out of the cellar window for one end of the box; this will give light in the cellar almost as well as though it had not been moved; the other end and one side of the box are left open; the open end comes next to the house, with the open side on the ground; this will entirely close up the window, but not exclude the light. I then bank up on either side of the box with manure, to keep the earth from freezing. In this way any of the tenderest climbing roses may be grown as well as in a warm climate, and if any one doubts whether it pays or not, to take this little extra trouble, let him come and see a "Lamarque" or a "Gloire de Dijon," from twelve to eighteen feet high, in full bloom, and I think he will be satisfied that it more than pays." [This is well worth trying.—ED.]

Attar of Roses.

The following account of the sources and preparation of the perfume, known as Attar of Roses, we gather from a most reliable recent work on plant products, the Pharmacographia of Flückiger and Hanbury. It was unknown to the Greeks and Romans. The Rose-oil of Dioscorides was a fatty oil, perhaps oil of olives, in which roses had been steeped. The first knowledge we have of the distillation of roses came from Persia, by way of Constantinople, towards the close of the 13th century. But the earliest mention we have of the *attar* is by Kæmpfer, very much later. Kæmpfer speaks with admiration of the rose gardens he saw at Shiraz, in 1683-4, and says that the water distilled from them is exported to other parts of Persia, as well as to all India; and he adds, as a singular fact, that there separates from it a certain fat, like butter, called *Ættr gyl*, of the most exquisite odor, and more valuable even than gold. It was not until the 17th century that the oil of roses was known, and sold very sparingly by the apothecaries of Italy and Germany. It was scarcely known in English commerce until the commencement of this century.

The chief locality for attar of rose, at least for that which comes to Europe and America, is a small tract in Asiatic Turkey, on the southern side of the Balkan Mountains, in the province of Rumelia. The Damask Rose (*Rosa Damascena*) is the species used, mainly, if not exclusively. The flowers are gathered before sunrise, and are always distilled on the same day. Those that are not taken directly to the still, are spread out in cellars. The still is of copper, of the simplest description, to which a straight tin tube is added, cooled by traversing a tub fed by a stream of water. The roses are thrown in whole, 25 to 50 pounds to a charge, with an adequate supply of water. The runnings are received in glass flasks, which are kept for a day or two at a temperature not lower than 60° Fahrenheit, by which time most of the oil, bright and fluid, will have risen to the surface. From this it is skimmed off by means of a small tin funnel, with a long handle and a fine orifice. The yield of the attar from the rose-water does not exceed 0.04 per cent. A large part of the rose-water used in England, is made in the south east of France, at Cannes and Nice; where also a little rose-oil is produced, of a fine quality, commanding a high price.

CORN (MAIZE) FROM EGYPT.—"Some 23 years ago, Dr. Abbot, of Egyptian antiquity fame, presented my father, the late Dr. John W. Francis, with some grains of corn which he had himself taken out of a mummy. They were planted in our garden in Bond St., and well do I remember the deep interest expressed by the many visitors who watched with anxiety the growth of grain that had been concealed for 3,000 years. In due course of time an ear appeared and ripened on the stalk. It resembled in many respects the Virginia corn of the present day. This being the case, and it having been [*thus!*] proved that corn existed in Egypt before the discovery of America," etc.....The above is copied out of a very queer pamphlet, just published, entitled "Curious Facts concerning Man and Nature," by a New York Physician. When the author has been in Egypt, and seen how ingenious and active the people are in putting up "mummy grain" and other articles, for which both maize and *dourra* are conveniently at hand, he may be less confident about the existence of maize in Ancient Egypt, and the germination of any sort of grain 3,000 years old. A. G.

Paris-Green in the Field, the Orchard, and in the Garden.

That persons have been injured while using Paris-green, we have no doubt. That any injury has resulted from the eating of potatoes, fruits, or other products of plants to which this poison has been applied, we do not believe. We do not say that it is impossible that this can happen, but we do say that tons and tons of Paris-green have been used in various parts of the country, to kill the potato-bug and other insects, and there has come to our knowledge no instance of injury resulting from eating the products of the plants thus treated, nor any analysis, showing the presence of arsenic in these plants or their products. Did we know or suspect that the slightest injury might occur in this manner, we should at once discountenance the use of the poison. It is necessary that the very deadly character of this poison should be known in order to insure care in its use. No person with scratched or cut hands should apply it, and whoever uses it should avoid handling it, avoid breathing the dust, and everywhere and all the time keep in mind the absolutely dangerous character of the article. It should be stored out of reach as carefully as gunpowder, and its application should not be entrusted to a careless or an ignorant person. There are two methods of applying it: in the dry state, diluted with some dry powder, and in the liquid state, suspended in water. There are various qualities of Paris-green in the market; the best makers, to their shame be it said, make several brands; in other words, adulterate it at the factory. There is no ready test which one can apply to ascertain the purity of the article, and the only way is to buy of

responsible parties who will properly represent its quality. For use in the dry state, flour is found to be the best to mix with the poison, as it adheres to the leaves better than plaster, which is sometimes used. With the pure poison one part to twenty of flour is sufficient. Some kind of a sifting arrangement must be provided, with a long handle. An apparatus which can be readily made by any tin worker was shown in the *Agriculturist* last month, p. 187; of course some other contrivance that will answer the purpose may be substituted; even a wide-mouthed bottle, with muslin tied over the mouth has been successfully used. Always keep to the windward, and by every possible precaution avoid breathing the dust. It takes but a little, properly applied, and even distribution is of more consequence than a large quantity. In applying Paris-green in the wet way, remember that it is not soluble in water, but is only diffused through and suspended in it, hence it must not be allowed to settle to the bottom of the vessel. Frequent and thorough stirring must be attended to. A tablespoonful of the poison to an ordinary pailful of water is the quantity used. It may be applied by means of a watering-pot, or by the use of some of the various garden force-pumps sold by seedsmen and at the implement stores. In using be careful not to wet the skin with the liquid, and if it gets upon the hands or elsewhere, have water near by to wash it off at once. When a force-pump is used, the liquid can be kept stirred by now and then directing the stream into the pail containing it. The chief use of Paris-green is to kill the Colorado potato-beetle and the cotton-worm; it has been successfully applied in the liquid way, to kill canker-worms on apple and other trees, and has been used also on squash and other vines in the garden. Of course it will not be proper to apply it to cabbages or other plants of which the foliage, or other parts which can retain the poison on the surface, is eaten. We repeat that Paris-green is a most dangerous poison and must be used with a full knowledge of this fact. Store it where by no accident others can have access to it. Use it in such a manner that no harm can come to the operator. See that the pails and other vessels are used for nothing else. Finally, do not use it at all if any other means for destroying insects will accomplish the end.

SETTING STAKES.—The usual method of setting bean-poles, grape-stakes, and other garden supports, is slow, but where there are only a few of them, it will not pay to have a special appliance for the purpose. In France, where the grape vines are largely supported by stakes, they use a sort of clamp or "clevis," as they call it, which greatly facilitates the operation of setting them. The implement itself is made of iron, of the shape shown in fig. 1, and provided with straps to fasten it. As there the laborers wear wooden shoes or *sabots*, the clevis is made large enough to work with those. The manner of using it is seen in fig. 2; the stake or pole being caught between the sole piece and the arm, can be held with great firmness, if the operator properly manages the upper end of it, and the force of the leg, aided by the weight of the body, pushes the point into the soil; a slight turn of the foot will loosen the grip, and allow another hold to be taken, if need be, to set the stake still deeper.

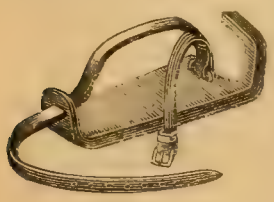


Fig. 1.

Fig. 2.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

Learning to Read Early.—The Other Side.

Every question has two sides, though to be sure, one may be the wrong side. There are two sides to this subject of early reading lessons, and doubtless there is truth on both sides. I am now prepared to listen more favorably than once I would, to the following testimony from a mother.—"I am quite in favor, so far as my own experience goes, of having healthy children learn to read early. G. will not be seven years old until May, but it is much pleasanter of an evening to have him interested in a book than to have him playing about. He enjoys study, and I think will make a good scholar."

From this standpoint—the mother's present ease—I am perfectly certain that my friend is right. Oh! *don't* I know it! My faith in the new education—in the theory of the kindergarten, and in the cultivation of a child's faculties in the natural order of their spontaneous development—continues to strengthen; but I sometimes feel, in actual experience, as though I have been trying to put new wine into old bottles, and I seem to see the bottles bursting and the rich wine wasting in consequence. All this in moments of discouragement, and then I think how much easier it would be for me if I had checked the children's questions more, had discouraged their appeals to me for sympathy—in fact had "turned them off," systematically, from the first, to keep their thoughts and queries to themselves. They "tire me to death," sometimes, and probably my indulgence of their questions and communications has helped to make them children of the "never-weaning" kind. No philosopher need suppose that a minister's work and a teacher's work and a writer's work exhausts the nervous force so that considerable rest or absolute relaxation from such work is necessary to health, while a mother can bear with impunity almost *constant* drafts upon her nervous power, in the way of planning, (as well as executing), all manner of cleansing clothing, finding question-answering and amusement-finding labors among her children—all these even if she had no other duties. But most mothers have many other labors in addition to these.

So you see, if a mother has several children and a variety of cares, and no chance to get away alone and rest a little while each day, it must seem very comfortable to have the little ones quietly reading instead of playing about. First catch your "healthy children" though. Be sure that they have no tendency to precocity, no nervousness either natural or resulting from disease, and then they may read as early and long as they choose, for they will not be likely to choose too much.

The Children's Feet.

I refer to the barefooted children, among whom you may count my own, on any warm summer day when they are living in the country. Can anybody tell me what there is in a little boy's constitution which makes it safer for him to go with cold, wet feet than for a little girl to do the same? I meet with people who seem to suppose that it is quite silly to have a boy wear shoes and stockings on days when they are themselves wearing woolen stockings for comfort, and when they would not allow their little girls to go barefooted. So long as the boys' (or girls') feet and hands have a healthy degree of warmth, I feel no concern about them, whatever the thermometer may say; but when I find the feet and hands cold, no matter what may be the month of the year, I know that something is going wrong, or will soon go wrong with the general health unless greater warmth is secured. It *is* a bother to have children wear their shoes and stockings a few hours in the morning and then take them off as the heat of the day comes on, but I am not going to let children eat their breakfasts in a blue and chilled condition.

They tell me that folks never used to take such pains with their children, and that those children were healthier than these. Very likely. I noticed what "Walks and Talks" said about his pigs. Did he not say that the better breeds cannot endure such neglect as common pigs do not seem to mind? Is not this the fact with all improved stock? Do not such animals require more careful nurture while young, and better reward good care in maturity? Is not this true also of seed in all its higher or more improved varieties? There is a similar difference between man in his savage, and man in his civilized condition. Herbert Spencer says that, "when, the constitution being sound enough, exposure does produce hardness, it does so at the expense of growth." I fancy that one reason why our children have not such sound constitutions as we could wish, is because of hardships and exposures during childhood of the generations preceding them.

All this may seem an out of place "topic" for June, but there are cool, rainy days, and many cool mornings and evenings in this month, when delicate children go about in a chilly condition.

Something About Rag Carpets.

Not much, however, for the very good reason that I know but little about rag carpets. I have one "on the works," and am doubtful whether to go on with it or to sell it to the rag-man. Of course, it pays some folks to make rag carpets, but it certainly will not pay every woman. I have been accustomed to speak of myself as having "made" one rag carpet—a very good one, too, and one that has done steady service for ten years, and is not yet entirely cast aside. I fancy now that my mother has sometimes smiled in her sleeve when I have spoken of that carpet as one that "I made." She it was who cut nearly every rag, and sewed the same proportion of them, who did all of the coloring and calculating, while I only brought out things that would do to cut up, (about half of which I should not now think of cutting into carpet rags until they had done more service as garments), planned the stripe, and paid the weaver. That was done when I was getting ready to go to housekeeping. Two years ago the same dear hands cut up another lot of rags for me, and I have thought myself almost in possession of another new rag carpet. But those rags are made largely of children's old clothes, and are shorter and poorer than those that went into the first carpet. I had them littering around a few days last week, and put them away as a bad job, it is so much slower business than I expected. I shall have to hire them sewed, at not less than twelve and a half cents a pound. So it will cost over three dollars to get twenty-five pounds sewed. Then there will be the cost of the work and the weaving. Are rag carpets cheap?

I had heard that a pound of rags yields a yard of carpeting. I think this is a very common estimate, but my neighbor, who has a beautiful rag carpet on her sitting-room, (beautiful at least by comparison with other rag carpets), tells me that a pound of rags to a yard makes a poor sleazy carpet in her opinion. She used a pound and a half to a yard. The filling, (or rags), in her carpet might be woven all in one long thread for aught one could tell by the piecing, so smoothly are the rags sewed and woven. She shewed me how she sewed all of her rags, which are mostly cotton, nine old sheets having been used up in thirty yards. She lapped one over the other about three-fourths of an inch, then doubled the lapped place and sewed three stitches before fastening her thread—the first a back-stitch to hold down the lapping end, then two stitches running, and then the fastening of the thread. Now she found the doubled and lapped place too thick, so every time she joined two strips, she picked up her scissors and cut away a scallop from the thicker portion, so as to leave the joined place no thicker than the rags on each side of it. I was interested to see just how a person who was brought up to do everything in the best manner possible, thought that carpet rags should be sewed, but I surely do not expect any one to sew my short carpet rags in that way for twelve and a half cents a pound! Nor would I probably take that pains myself.

"She was five years making that carpet," said the lady's husband.

"Men never like rag carpets till they are done,"

I said, but my friend protested that her husband never had any cause for complaint about her carpet on account of the litter, and if the work took her five years, it was chiefly because she did so little at a time.

Some women are even ten years making a rag carpet, but they seem to do it very easily after all, and perhaps their's is the best way for women who have settled homes and the power to take things by the easiest handle. Whenever a garment is condemned as past wearing, and fit only for a carpet, it is at once cleansed, cut up nicely, and put away with the carpet rags of the same color. If the carpet is to be striped, the rags are sewed and wound before putting away. Then, when enough rags have accumulated, how easy it is to get them out and pack them off to the weaver, stopping, perhaps, to color and strip up some old sheets. This saves much which would otherwise be lost to the carpet.

Many suppose that a striped carpet is, of course, prettier than one that is made "hit-and-miss." I saw one of the latter kind upon a floor in Connecticut, several years ago, which pleased me so much that I thought I would never make another striped carpet. I told my friend I had no idea that a hit-and-miss carpet could look so lively. She said it looked bright because there were bright rags in it. Then I observed that, though the prevailing tint of the carpet was brown or grey, there were all colors in it, and I found that there was a considerable quantity of bright rags, clear scarlet, blue, green,

Fig. 1.—RAG-TYING MACHINE.

yellow, and orange. These bright rags were in short lengths and evenly distributed. Their part in the carpet was to give it a cheerful, sunshiny look. There was an evenness of tone about the whole, which can only be obtained by sewing the different colors according to some definite system, not spotting them in at random.

A Rag-tying Machine.

I had hoped for considerable assistance from a home-made, rag-tying machine, but it did not meet

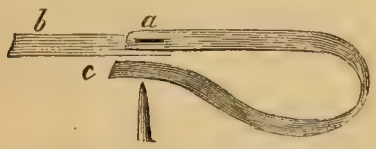


Fig. 2.—USING THE MACHINE.

my expectations. I think, however, that strong cotton rags might be joined in that way more rapidly than by a thread and needle. My own rags are so promiscuous in character that we could not make it work satisfactorily. Woolen rags cut bias or thick cloth ones cut very narrow, could not be tied so as to hold. It seems to me that the knot does not lie so smooth as the place joined by sewing, yet I have seen carpet-rags sewed so that the work was even more bungling than this knot.

The machine is easily and quickly made, and I describe it, as it may prove a help to somebody. My boy was quite charmed with the work of tying if he could pick the best rags to use on the machine, which would hardly do.

A sharp knife-blade, (*a*), and a blunt spindle, (*b*), are the necessary parts of the machine, and these are inserted in a short board, (*c*), about a foot long, one on each side of the board. We used a jack-knife blade, and the spindle was made of red cedar. The knife blade was driven up through the board, and the spindle was made fast in a gimlet hole.

To use the machine, (see fig. 2), take a rag in each hand, lap the one, (*a*), in the right hand, an inch over the one in the left hand, (*b*), press them down upon the knife-point, cutting a button-hole slit as seen at *a*, turn the other end, (*c*), of the rag that was in the right hand under the slit that is through both rags, and press it upon the spindle, punching the end through the hole; draw the noose snug, and the result is a knot.

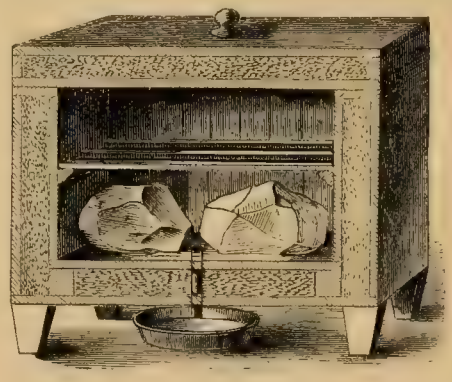
Vines at the Windows.

It is a common mistake to train the morning glories and other climbers in such a way as to darken the windows too much. On bright days, when the doors stand open, and when shade is necessary to comfort, it seems all right to have a thick screen of vines at the window. But there are some dark, damp days—whole weeks of them in the fall, while the vines are still too beautiful to pull down, when the rooms so shaded are made gloomy and unwholesome by the mass of vines at the window. It is not yet too late to fasten the supports in such a way as to frame the window, rather than to hide it. If a screen is desirable it is best to sow the vine seeds at a little distance, and use stout poles with the strings for the vines to run upon, keeping the whole away from the wall of the house.

But it is too bad to make any permanent defence against the bright sunshine, which is far more friendly than mischievous in its visits to our rooms. When it grows too ardent, a thick curtain may be dropped at a window where there are no blinds.

Ice-Boxes and Refrigerators.

It seems hardly possible, now that ice is looked upon as a necessity, that less than 50 years ago it was a rare luxury to be enjoyed only by the wealthy. It is not our present purpose to say anything about the procuring of ice, but to give some hints about the use of it, whether it be drawn from one's own ice-house or bought of the ice dealers. In either case a receptacle of some kind is required for utilizing it. To those who can afford it, one of the modern style of refrigerators will be the handiest. In these there is a receptacle for the ice, and separate compartments to receive the articles to be kept cool. In buying a refrigerator—at least a large one—see that there are two or more distinct cool-chambers, in one of which milk, butter and other things which readily absorb odors, can be kept separate from meats and other articles which give off odors. In all refrigerators constructed upon scientific principles, the place for the ice should be at the *top*, as the cool air is heavier than warm, a proper circulation will be induced. Lesley's Zero Refrigerator, which we satisfactorily used for several years, is constructed on this principle. Those who do not wish to go to the expense of a refrigerator, or need to store ice in larger quantities than an ordinary refrigerator will admit, can make an ice-box which will answer the purpose, and will serve all the uses of a refrigerator, though less economical in the expenditure of ice. Of course ice only cools the atmosphere around it, and the articles placed near or in contact with it, by melting. To melt, it must have a certain amount of heat, and this it gets by robbing whatever may be near it. An arrangement, which prevented ice from melting at all, would be a very good ice preserver, but a poor refrigerator. The object is to prevent all melting except so much as is useful, hence all refrigerators and ice-boxes are so constructed that the ice will receive no heat from the outside atmosphere, but all that it gets must be taken from the articles confined with it.



HOME-MADE ICE-BOX.

As to exercise any useful effect, ice must melt; all such contrivances must have a provision for carrying off the drip. The points to be regarded in a home-made ice-box are—a non-conducting exterior, and a drainage-pipe. The box must be made with double walls; *i. e.*, one box within another, and the space between the two filled by some non-conducting material. The inner box should be water-tight, and this is best secured by lining it with zinc. It will be seen that there are no difficulties in the way of constructing a cool box, as it may be made for the purpose, or two dry goods or other boxes may be found, one a few inches smaller than the other, which will answer. The engraving shows such a box in *section*. The kind of non-conducting material is not important, so that it be light and dry; some of the refrigerator makers use felt; light and dry sawdust, charcoal dust, cotton, waste wool, or any similar substance that will enclose plenty of air—for that is the real object of it—will answer. The zinc lining of the inner box must be perfectly tight, as no water shall get to the filling, for it would then be a poor non-conductor, besides it would become musty. Some blocks should be placed under this box to prevent its weight from resting upon the filling, and a pipe is to be arranged to lead from it through the filling and the outer box, to allow the water from the melting of the ice to run off; if this pipe can connect with a drain or some outlet, it will save frequent emptying of the receptacle which otherwise it is necessary to place under it; a bit of sponge in the upper opening of this pipe will prevent the entrance of warm air and not obstruct the flow. The lid of the box may be made double, and filled with the non-conducting material, or, if the box is a nicely made one, an inner lid may shut upon the inner box, and another close fitting lid upon the outer one, the few inches of air between the two, if they fit tightly, serving as a sufficient non-conductor. A movable shelf of slats resting upon cleats above the ice completes the arrangement. The melting of the ice may be materially retarded by covering it with a blanket or other woolen material, and still make the box sufficiently cool. Great care is necessary to not spill milk or other liquids, or otherwise soil the interior, and in any case all refrigerators or ice-boxes should be occasionally thoroughly washed and aired. In this article a number of inquiries by different parties have been answered. Our correspondent E. L., of Wilmington, Del., finds a still cheaper arrangement very useful; he takes two boxes, has lids to both, fills in between with sawdust, makes a hole through both at one end for the escape of water, covers his ice with a blanket, and finds it very satisfactory.

Minced Meat may be regarded as a recent article of commerce.—We mean meat and its adjuncts ready prepared for making mince pies. The trade in the article must have increased very much within a few years, for now we see stacks of covered pails standing at the doors of the wholesale grocers, bearing on showy and highly colored labels, So & So's "warranted," or "original," or "home-made" mince meat. Then quite often a letter comes asking how this "mince" is made—"fearfully and wonderfully" we doubt not, but of the precise "order of its going" we know not. We have a fair share of confidence in human nature, but it has never been so strong as to induce us to order hash or bread-pudding at a hotel or restaurant, nor has it extended to the purchase of promiscuous sausage. But miscellaneous mince meat! That is a little too much. Perhaps our early education prejudiced us; near the school house where we received our early impressions, was a pie-bakery, the owner of which allowed us the run of it. The bullocks' hearts and sheep's and other haslets that came into that bakery, and went out as mince pies, have perhaps given us a bias. It is a case of Sam Weller and the veal-pie—"Werry good wen you knows the woman wot made it." For ourselves, we should as soon think of buying a second-hand tooth-brush, as mince meat put up by a person we did not know. That an article of this kind can be made of as good materials,

and with as much cleanliness on a large scale as on a small one, we do not doubt—but it is all a matter of personal knowledge and confidence, one must "know the woman wot made it."—We have no reason to believe that this "boughten" mince meat is not just as good as any other, we have no proof, only we should go without mince pies for the rest of our lives before we bought any. As to how it is made, we suppose it need not be different from any good home-made mince—as to the proportions of which no two housekeepers agree. We learn that the mince that is sold is highly alcoholic—brandy, it is said, is largely used to make it keep, but it is more likely to be cheap whiskey, when any decent brandy sells for $8 or more a gallon. In short, we don't know—and have no especial desire to know—about this compound.

A Home-Made Chair.

The publication of several articles of home-made furniture, such as tables from boxes, and other easily made conveniences, has induced our friends to wish for more, and we have several letters asking us if we will not give others. The letter of

Fig. 1.—HOME-MADE CHAIR—PLAIN.

F. W. Winship, Minn., giving an easily made chair, comes very opportunely. The chair is shown in fig. 1. A board 40 inches long, and 12 or 15 inches wide, as may be preferred, answers for the back and a part of the legs; the seat is made of another piece of board 12 or 15 inches long, and of a width to correspond to the back; the edge of the seat which comes next to the back, must be beveled to give the back the proper pitch; it is then nailed to the back, and further strengthened by nailing a cleat to the back directly under the seat; strips at each side, nailed on as shown in the engraving, strengthen the seat and serve as the rear legs. This chair may have both seat and back upholstered, or with only a cushion for the seat, it will be found very comfor-

Fig. 2.—HOME-MADE CHAIR—ORNAMENTED.

table. We have no doubt that the idea is original with "F. W. W.," but a number of years ago we made a similar chair for a particular purpose; a young surgical friend needed a chair with a peculiar tilt, in which to perform an operation, and not being able to purchase a regular operating chair, applied to us to suggest a substitute; finding what was wanted, a chair on just this plan was made and covered in an hour or two, which answered every purpose. In fig. 2 is shown how the outlines of the parts may be varied, and produce a really handsome piece of furniture; the pattern can be made more elaborate if one wishes, but there is nothing suggested in this which may not be cut out with a narrow saw. A chair of this style made in hard wood and oiled, would not be out of place in an expensively furnished house. Very comfortable piazza-chairs may be made after these patterns.

Care of the Teeth—Suggestions.

It is admitted that poor teeth are more common among Americans than with any other people. Whether this is due to poor digestion or not, we will not here discuss, though it is quite certain that poor teeth will produce poor digestion, and its consequent ills. It is a fixed physiological fact that food, to be properly digested, must be masticated—ground fine by the teeth and mixed with salvia before it passes into the stomach. Defective teeth, or the lack of teeth, prevent the proper performance of this, the very first act in the complicated process of digestion. The dentist can supply artificial teeth when the natural ones are lacking, but very few persons seem to be aware of what every honest dentist will tell them, that very poor natural teeth are better than the best possible artificial ones. No matter how well they may be made, artificial teeth are always a source of discomfort. Hence the importance of great care to preserve every tooth possible. A natural tooth should be kept useful by filling so long as it can be operated upon. Filling is too important an operation to be trusted to any but the best operators. It sometimes happens, as in the writer's case, that gold and other metals can not be tolerated; the teeth being sensitive, and the gold a good conductor, a sensation of chill and pain was felt when cold or hot liquids came in contact with it. This difficulty was remedied by using a filling of prepared gutta-percha, which has remained firm from three to six years. Some dentists introduce a non-conducting layer of gutta-percha under the gold filling. The proper care of the teeth will do much to preserve them, and it is a great mistake to neglect the teeth, as many do, with the idea that when they are gone, they can afford to buy a new set. We repeat with emphasis what was said above, that the very best artificial teeth are a poor substitute for even poor natural teeth. The teeth of children, after they get their second set, should be carefully looked after, and in old and young, the first signs of decay should be arrested by the care of a skilled dentist. Insist upon proper care of the teeth; few persons are so careless as not to brush them once a day—in the morning usually—but it is quite as important to brush them at night also; and besides this, every particle of food should be carefully removed from between the teeth. Never use a pin, or a metallic tooth-pick, but one of wood or quill, and small enough to go between the closest teeth. Food left between the teeth at night ferments and causes decay. Use only a moderately hard brush and water, as a general thing. The tooth-powders and washes are for the most part worse than useless—some being positively injurious; the teeth should never get into such a condition as to need a harsh scouring with powdered pumice, or powdered charcoal; when this is the case, the cleaning should be done by a dentist, and the teeth kept clean afterwards by the frequent use of the brush. Many persons think that, unless they use a powder of some kind, they are not doing their duty; let such use powdered orris-root, or some fine toilet-soap. If the gums are in a spongy, soft condition, use a few drops of tincture of myrrh in the water, or make a cold infusion of white oak-bark to use as a wash; the strength is not important. To sum up—use the tooth-brush morning and night—all the better if after each meal; use a wood or quill tooth-pick thoroughly, especially before going to bed; avoid all "boughten" and much advertised tooth-powders—and, especially, at the first signs of decay, consult a competent dentist, and hold on to every natural tooth as long so it can perform service.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks—Brazil Nuts—Monkeys and Monkey-Pots.

Among the questions on hand from my young friends, is one about Brazil Nuts, asking where they come from and how they grow. I suppose almost every boy and girl knows these nuts, but for fear that some of you may live too far away from seaports for them to reach you, I have had a drawing made of one, (fig. 1); it is about two inches long, and three-cornered, the two flat sides about an inch wide, and the back, which is somewhat rounded, is narrower; its shell, which is brown, is not difficult to crack, and is filled with the large white kernel, which is very pleasant to eat, its flesh is so smooth and fine, and has such a cream-like flavor, that many call them Cream-nuts. These nuts are borne by a large tree, found on the banks of the Amazon, Orinoco, and other South American rivers, where it forms large forests. The nuts were known long before, but the tree was first described by Humboldt; this great traveler, with his friend and companion, Bonpland, were in South America near the beginning of this century, and finding that the tree was unlike any known before, they named it after their friend, Bertholet, who was then becoming celebrated as a chemist, hence the Brazil-nut tree is *Bertholletia*, and as it is a very fine, lofty tree, they gave it the specific name *excelsa*, which is the Latin word for lofty or high. The tree is usually over 100 feet high, and sometimes grows 150 feet, and has fine large dark green leaves, about two feet long, and half a foot broad. The cream-colored flowers are followed by the fruit, which is a large

Fig. 1. BRAZIL NUT.

Figs. 2 and 3.—ENTIRE AND OPENED FRUIT.

round case or pot or jug, very much like a great wooden bomb-shell, six or eight inches through, which is shown in fig. 2, and, as you see, looks very little like a Brazil-nut; the nuts are inside, and whoever wants them must work for them, as the shell of this case or pot is about half an inch thick, and so very hard as to require heavy blows with a hatchet to break it. Figure 3 shows one of these pots sawed across without disturbing the nuts; they are placed around a central portion, to which, while growing, they were all attached, as it is through this they received their nourishment from the tree. You now see what gives them their 3-cornered shape, they crowded each other as they grew; you perhaps have noticed that when there are several chestnuts in a bur, they are shaped differently from the nut that has the whole bur to itself, and had plenty of room to

Fig. 4.—SAPUCAYA NUT.

Fig. 5.—FRUIT.

grow without crowding. There are from 18 to 24 nuts in each fruit, and so nicely are they packed away, that it is said to be impossible for one to put them all back again in the pot after they have once been taken out. I do not know how much one of these wooden jugs full of nuts weighs, but it must be several pounds. At all events, travelers tell of the great danger of entering the forest

when the *cabombas*, as the Brazilians call them, are falling; most of you know how it feels to be struck by an apple falling from a low tree, and can imagine that one of these heavy wooden pots, coming from 50 to 100 feet above, would be too much for even an Indian's head. At the season when the fruits are falling, the Indians arrange a sort of wooden shield to protect their heads and shoulders. The monkeys are exceedingly fond of the nuts, and will run great risks to steal them when the Indians are gathering them: it is said the Indians make the monkeys help them; by throwing sticks and stones at the monkeys in the trees, and these animals, who imitate what they see others do, use the fruits as bombs to "fire" back. At the top of the case, or jug, you will see, (in fig. 2), a hole, which is nicely closed by a cover which drops off when the nuts are ripe; a beautiful contrivance, you will think, to liberate the nuts from their hard enclosure. The opening, with its lid dropping off at just the right time, certainly does look as if it was especially arranged to let out the seeds—unfortunately the hole is *just too small* to allow a nut to drop out. Why every preparation should be made for letting the nuts out, and fail because the mouth of the jug is too small, is a puzzle, especially as we know that in the Sapucaya, a related nut, they do come out of their case by means of just such a hole, only larger. What it all means we shall probably find out some day, but it is quite sure that if the nuts could fall out readily, the boys and girls who buy the nuts, would have to pay much more for them, as the monkeys and other animals would make them very scarce. The nuts are not only collected to send to other countries, but the Indians live largely upon them, and make a great time of rejoicing over the harvest of *juvias*, as they call them. The Brazilians call the nuts *castanhas*—and the people who gather the nuts are called *castanheiros*, who go up the rivers in their boats and celebrate the occasion with music and dancing. A man, with a boy to pick up the fruits and bring them to him, will break about 300 a day. The kernels contain a great deal of oil, a pound of them will yield, when pressed, nine ounces of an excellent oil for burning and other uses.

Another nut, which is not so well known, as it is much less common in the shops, though often found in city fruit-stores, is the Sapucaya nut. This, shown in fig. 4, is about three inches long, somewhat bent like a letter S, with deep wrinkles on its surface, and a thin brown shell; the kernel is more delicate and of even a finer flavor than that of the Brazil nut. This is produced by another large tree in Brazil, and, like the Brazil nut, is enclosed in a case, or pot. The name of the tree is *Lecythis*, the Greek name for an oil-jar, given to the tree because it bears these strangely shaped fruits. The case, or jug, for the Sapucaya (fig. 5) is like an urn, with a nicely fitting lid, which falls off when the nuts are ripe; the hole in this case is large enough to let the nuts drop out. It is said that the monkeys, when pelted with stones, will not throw back these fruits, as they do those of the Brazil nut, but are too fond of the nuts to throw them down, and sit and eat them instead of showing fight. But if the natives can not use the monkeys to get the nuts, they can use the fruits to catch the monkeys. The hole in the fruit is just large enough to admit the monkey's hand, which he puts into the hole, and grasps a nut; but the hole which will let the empty hand to go in, will not allow the hand and a large nut to come out, and the disgusted monkey is in a quandary. The Indians take several of these fruits, *cabombas*, as they are called there, take off the lids, and lay them about under the trees; the monkey, being very greedy, will not be satisfied with trying one, but will put each hand into a pot and grasp a nut; he is too fond of the nuts to let go, and as he can not climb with such awkward mittens on, he is easily caught. The Brazilians say of a shrewd person, "He is too old a monkey to be caught with a *cabomba*," just as we say, "Old birds can not be caught with chaff." The jars themselves are put to various uses, and are called monkey-pots. As these most delicious nuts are very scarce and dear, because they fall out of the pot and are eaten by the monkeys, we may be glad that the hole in the Brazil nut pot is just too small.—"But did you ever see all this?" some bright-eyed youngster will ask.—I have seen the fruits, or pots, of both kinds of nuts, and have read the rest in books of travel by persons that I have no doubt tell the truth, and whenever I tell you things in my "Talks" that I have not seen myself, I try to make it appear, by using "it is said," and "I have heard," that I am giving information that I got from others. THE DOCTOR.

What is Foolscap Paper?—You probably all know foolscap paper when you see it; do you know why it is so called? This is the reason: When Cromwell became Protector of England, he caused the cap of liberty stamped upon the paper used by the government. When Charles II. came into power, he had occasion to use some paper, some of this government paper was brought to him. On looking at it he inquired the meaning of it; and on being told he said, "Take it away: I'll have nothing to do with a fool's cap." Thus originated the term *foolscap*, which has since been given to a size of writing paper usually about 16 by 13 inches.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. It is tea hour.
2. Kiss me, Sir H.
3. Backward.
4. Sam rust tub.
5. Faces in icing.
6. Oh! red hot Rob.
7. Arouse ant.
8. In cream-pot.
9. Her insane Pop!
10. A rude pert.

CHARADE.

There are two words that Frenchmen speak,
The one or the other most men seek,
To gain for friend and strong ally;
One 's of the earth, and one 's of the sky.
The joined together will disclose
A fruit that every person knows. HENRY.

CONCEALED SQUARE WORD.

1. It is so dark that even Jack wouldn't go now.
2. I don't think Eva need worry herself about him any more.
3. You must cut and send some more wood home today, Jack.
4. He says the stone struck him on the head. NIP.

CROSS WORDS.

1. My first is in knoll but not in hill,
My next is in factory but not in mill,
My third is in pensive but not in sad,
My fourth is in furious but not in mad,
My fifth is in coal but not in wood,
My sixth is in manner but not in mood,
My seventh is in companion but not in chum,
My eighth is in addition but not in sum,
My whole is a man well known to fame,
Arrange the letters and show his name.
STOCKBRIDGE.

2. My first is in cannon but not in gun,
My next is in pleasure but not in fun,
My third is in pudding but not in cake,
My fourth is in roast but not in bake,
My fifth is in Adam but not in Eve,
My sixth is in spin but not in weave,
My seventh is in noon but not in day,
My eighth is in potter but not in clay,
My ninth is in James but not in boy,
My tenth is in fun but not in joy,
My eleventh is in owl but not in rook,
My twelfth is in pocket but not in book,
My thirteenth is in orange but not in plum,
My fourteenth is in finger but not in thumb,
My fifteenth is in county but not in state,
My sixteenth is in bowl but not in plate,
My seventeenth is in acre but not in land,
My eighteenth is in rock but not in sand,
These letters place rightly and you will see
A very good friend to you and me. J. ADAMS.

NUMERICAL ENIGMAS.

1. I am composed of 17 letters:
My 7, 14, 4, 11, 15, 8, 10, is a continent.
My 2, 15, 14, 1, is a city in South America.
My 13, 15, 3, 4, 11, 15, 12, is a country in Asia.
My 6, 17, 15, 3, 4, 16, is another country in Asia.
My 9, 15, 3, 4, 5, 15, 1, is a country in Western Africa.
My whole is the name of a little girl who likes to read the *American Agriculturist*. BERTIE.

2. I am composed of seven letters:
My 1, 5, 6, 7, is without light.
My 4, 5, 6, 7, is to stamp.
My 3, 2, 1, is a boy's nickname.
My 2, 3, 1, is what all things must have some time or other.
My 3, 5, 4, 2, is what each one of us has.
My whole is a country in Europe. HUMPTY DUMPTY.

DOUBLE ACROSTIC.

The initials give the name of a famous poem, and the finals the name of the author of it.

1. A kind of fish. 2. To prohibit. 3. A season. 4. Denominating. 5. Is caused by trouble. 6. A nest. 7. Legitimate. 8. A disbeliever. 9. A Biblical mountain. 10. To shun. T. T. C.

AUTHORS.

(*Example.*—I am often to be seen
Frisking in the meadows green.—*Lamb.*)

1. Frightened, amazed with fear we stand
Beholding blood on every hand.
2. Opposed to aged; noting one
Whose earthly journey's scarce begun.
3. One of the powers, which, when braced,
Has often bulky weights displaced.
4. Thoughts that from joyous feelings grow,
On Nature's dial I soon show.
5. Something of many colors take,
Much like a coat of ancient make.
6. Owned by the gods, machine divine,
Although 'tis slow, it grinds quite fine. HENRY.

ALPHABETICAL ARITHMETIC.

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O K P ) R I N H E C ( A A O C
        A C E
        -----
        A P H
        A C E
        -----
          O E E
          O K P
          -----
            C R C
            C N C
            -----
              E K
```

PUZZLE.

Take two thousand, one hundred and two,
And place them just where they should go,
You will then see what monkeys oft do,
As well as some children I know.

PI.

Warders dan nincsthumps era eth sisab fo dogc tomvergenn.

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

ANAGRAMS.—1. Satyrs. 2. Usurped. 3. Severed. 4. Decimal, and Medical. 5. Despair. 6. Eastern, and Nearest. 7. Parental. 8. Umbellar. 9. Coagulate. 10. Costumer.

NUMERICAL ENIGMA.—Barking dogs seldom bite.

DIAMOND PUZZLE.

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      H
     TEA
    PIANO
   JOURNAL
  SOLITAIRE
 HEARTHBRUSH
HEARTHANDHOME
 COMBINATION
  BUILDINGS
   PATHWAY
    CLOAK
     IMP
      E
```

CROSS-WORD.—Monday.

A PARTY OF GIRLS.—1. Minnie. 2. Helen. 3. Eva. 4. Mabel. 5. Hattie. 6. Carrie. 7. Edith. 8. Alice. 9. Cora. 10. Emma. 11. Madge. 12. Addie.

PI.—Constant occupation prevents temptation.

ALPHABETICAL ARITHMETIC.—209)74586(356. *Key:* Pink Flower.

ISLANDS.—1. Spice. 2. New Guinea. 3. Seychelle, Seashell. 4. Skye. 5. Turks. 6. Manitou.

TRANSPOSED DECAPITATIONS.—1. Edna, Dan. 2. Burin, ruin. 3. Dwina, wain. 4. Olive, levi. 5. Althea, health. 6. Bugle, glue.

Thanks for puzzles, letters, etc., to F. W. Parks, Geo. H. Fuller, B. F. Ross, J. C. Leitch, F. J. P., E. S. D., F. W. Tuttle, Two Orphans (you can take your choice of the "Snowman, Cardiff giant, or Senator Johnson"), E. D. S., Mary A. A., W. R. F., K. P. N., Mame, Aggy S., J. H. Noble, and American Jack.

Send communications for the Puzzle Box to Aunt Sue, Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Sunflower Girl.

What do you suppose the artist had in mind when he drew the "Sunflower Girl?" Did he wish to show the simple beauty of a young girl, against the gaudy flaunting beauty, such as it is, of the sunflower? It can hardly be that, for the Miss is not of the simple kind of beauty; on the contrary, she is very much fixed up, over-dressed we should say; very far from simple. It may be that she has begun to study botany, and is taking the specimens to examine—but she does'nt look very studious, and we fear she thinks too much about dress to study plants! Perhaps she is giving a party to her young friends, and is taking the sunflowers to the house to decorate the room, but that seems hardly probable. After all, it is most likely that this is a young city Miss, who is making a visit to the country. How wonderful it all seems to her, so much room everywhere, and grass, trees, birds and flowers! How unlike the crowded streets and narrow houses of the city. Flowers everywhere; half wild with delight she runs from one to the other, and at last sees the tall sunflower, which seems to her more wonderful than anything she ever saw before, so forgetting all about her nice dresses, she takes as many of these great flowers as she can carry, and hurries to the house to show her wonderful discovery. Her country cousins say: "They are nothing but sunflowers,"—and her mother says, "My child, look at your dress—if you are going to run about in that way, and soil your dress, you shall wear an old one."—That's just what the poor child wants. What a mistake some persons make who go into the country, they lose a good part of the enjoyment of it because of their dress. Happy are those children whose clothes are never too good to allow of fun and frolic.

Aunt Sue's Chats.

EUNICE W. Y. writes from Philadelphia—"*Dear Aunt Sue:*—Two puzzles have been going the rounds here, which have caused quite a commotion. We have studied all sorts of histories, and consulted wise men, but all to no purpose. Little Minnie S——, whose father takes the *Agriculturist*, said, 'ask Aunt Sue about it, *she* will know the answer.' So I take her hint, and if you can give us any light on the subject we shall be greatly obliged."

Puzzle No. 1.—"Charade."

"A headless man had a letter to write,
'Twas read by one who had lost his sight,
The dumb repeated it word for word,
And he was deaf who listened and heard."

Puzzle No. 2.

"To five and five and fifty-five
The first of letters add;
'Twill make a thing that killed the king,
And drove a wise man mad."

I am happy to strengthen "little Minnie's" faith in Aunt Sue, by giving you the solution of both the puzzles. The first is a sort of constructive "Decapitation," and had it been fairly named, it would have been less of a puzzle. "A headless *man*" is simply "'*an*"; the "an" we promote to "Ann." Ann "had a letter to write," and the letter she wrote was the *letter* "*O*," or *nought*; "nought" is "nothing," and that is exactly what the blind saw, the dumb spoke, and the deaf heard. *That* is "easy enough when you know how," isn't it?—The second puzzle is stated incorrectly, otherwise you would have soon guessed it. It should be:

"To five and five and fifty
The first of letters add," etc.

"Five and five"—V and V—put close together, make W; L stands for "fifty"; and "the first of letters" is A. So then you have W—L—A,—nothing very dreadful

in that; but just transpose them into "LAW," and I think you will find sufficient to drive wise men mad, especially if they get into Chancery with it.

IDA S. T.—I do not like to discourage the little ones, but we have a great many "numerical enigmas." An answer to the whole is sufficient, without writing each separate item.

J. H. T.—Much obliged for the puzzle you send, but we do not wish to publish any but original ones.

M. and W. S. N.—Thanks for your "alphabetical arithmetic," but I can not use it, for I think it is utterly unsolvable. I see no possible way of getting a clue to it.

GEORGE H. F.—We make no distinction in our PUZZLE BOX between "North" and "South," all are welcome.

How Engravings are Made.

All boys and girls like pictures; who ever saw one who did not? Long before the little brother or sister can talk, you can amuse the baby by showing it pictures. Sometimes boys or girls will be so much interested in pictures that they wish to know how they are made, and letters have now and then come asking us to tell about them. We are reminded by a letter from Chas. W. M., Tuscola Co., Mich., that we many months ago promised to say something about engravings. Charles and his sister have been talking the matter over, and being unable to satisfy themselves, they have concluded to "muster up courage" to write to The Doctor. Charles and his sister, and every other boy and girl in the whole family of young *Agriculturists*, should know that it does not require the least "courage" to write to The Doctor or others of the editors, who are all ready to help them—though they may not always answer their questions right off. Charlie writes such a clever letter that it is a pity we have not room to print it. His questions show that he does not know that there are several very distinct kinds of engraving; the principal kinds being on wood, on metal, and on stone, and the ways of making these, and of printing them are about as unlike as the materials that are used. The most common kind is

Fig. 1.—BLANK.

WOOD ENGRAVING.

By common I do not mean poor, though the very poorest as well as some of the very finest engravings, are made in this way; but that these are more used than any other. I will try to tell you something of the different kinds, and begin with this first. Wood engravings, it hardly needs to be said, are made with wood, and for the better kinds only one sort of wood will answer—box-wood. You know the box of the gardens used to make edgings to beds, and what a slow growing plant it is, with its little shining evergreen leaves. In southern Europe, and in Asia, it grows to a tree, with a trunk 8 inches or more through. Such trees are hundreds of years old, and the wood is so close and fine that the rings made by each year's growth can scarcely be seen. This wood is cut into slices crosswise about an inch thick, and sold by the pound; the preparing of the wood is a business by itself; one surface is made very smooth, and if large blocks are needed, they are made by gluing small pieces together, and very large ones are strengthened by bolts running through them. For coarse engravings, other hard woods, such as pear and apple-tree wood are used, and for such work as the great circus show bills, mahogany and even common pine are used. So much for the material. If you take a block of wood and ink its surface with printer's ink and then press it down upon paper, the ink will leave the block and stick to the paper, and you have a clear black spot, as in fig. 1. Now if you take your knife and cut a groove like a V on the surface of the block and then ink it and press it on the paper as before, your print will, as in fig. 2, show a white line through the black, as the ink would not go into the groove, and if it did, the paper would not reach the sides of the groove to take it out.

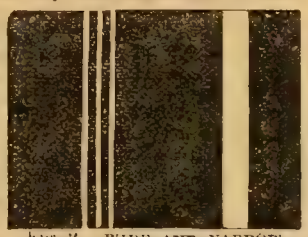

Fig. 2.—WIDE AND NARROW GROOVES.

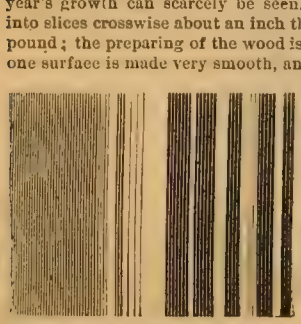

Fig. 3.—GROOVES AND TINT.

Fig. 4.—ENGRAVER'S TOOL.

On this block are one wide groove and three very narrow ones like deep scratches. If several grooves are cut a little distance apart, and a print of the block taken with ink, it will then show several lines, and these lines will be heavy or light, as there is more or less distance between the grooves. Figure 3 is printed from a block which Mr. Hinkle cut for you, that you may see how a block with grooves of various sizes will print. You see that where there is a wide part of the face of the block left uncut, it prints solid black, where the wood is cut away, making a wide groove, it is clear white, and where there are several grooves very near together, it prints lines, and the black of these lines with the white between them, makes a gray tint. You can readily understand that these lines may be curved in any manner, and the same effect would be produced. The *untouched* surface of the block receives the ink and does the printing, and where the surface is cut away, there will be no ink, and this part of the block will, so to speak, print white. The size of the lines and their closeness makes the tint. Suppose we wish to have the letter O in a wood engraving, it would first be carefully drawn with a pencil, and this is not the engraver's business, but the artist's. The letter being drawn exactly as it is wanted, the engraver takes it and cuts away the surface of the wood for a slight depth all around the outside, and then from the inside of the letter, and leaves the surface of the wood where the pencil marks are, untouched. He would do the same if, instead

Fig. 5.—ENGRAVER'S TOOL.

of a simple letter, he had a highly ornamented one. A picture in which there is not only form, but light and shade, about which we shall tell more hereafter, is treated in the same way, it is his business to cut away all the surface of the block that is to be white. To do this cutting he uses tools made for the purpose; these tools, called gravers, are of different sizes and shapes, two of the common ones are here shown; fig. 4 has a wedge-like point, and fig. 5 has a sort of diamond point, and there are those of other shapes, some of which will allow a wide and others a very narrow groove to be made. These tools are made of the best steel, and kept very sharp. The manner of using them can hardly be described, and can only be learned by practice. A good engraver will cut a series of grooves side by side, leaving a narrow line of unbroken surface of the wood between them, the lines so fine that you will need a magnifier to see them, and the magnifier will show the lines all perfectly true and unbroken, and all at the same distance apart. Thinking that you will understand from this the principle upon which wood engravings are made, the story of how the picture gets upon the block before the engraver takes it in hand, will be told at another time.

Drying Plants.—Sarah M. T. We are glad that you wish to know how to dry the plants you collect, and no doubt other girls, if not boys too, would like to do so. Laying the plants between the leaves of some large book of little value, will do for a few, but it is a poor use to which to put a book, and allows of only slow work. Get some newspapers, printed on as soft, thick paper as you can find, and fold them to make pads of several thicknesses—at least 6 or 8—putting two papers together if need be—and of convenient size. Botanists make them 18 inches long by 12 wide, but you can make them smaller if you choose. Put a few stitches through them to keep them from separating. These are your "driers," now prepare a number of single folds of newspaper of the same size—a single fold like a sheet of letter paper, these are the "folds." Then you will need several boards, all the better if kept from warping by a cleat at each end. Two may do, but more will be handy. Having collected the plants, place two driers on one of the boards, open a fold and lay the plant out as naturally as possible upon one-half, fold over the other half, place this fold with the plant in it upon the driers, and put another drier on it. Put more plants in other folds in the same manner, and put them on the pile with driers between. When all are done, put a board upon the top and upon that a heavy weight. A box with stones in it, fitted with handles to lift it by will do, or you may do up bricks in parcels of four or more with some strong paper and twine and use several of them. As a Miss is not able to lift very heavy weights, it is better to have the weight so fixed that it can be handled a part at a time. With small plants you can put several in a fold. The driers need to be changed every day, and for the first few days it will be better to do it twice a day. To change, lay a fresh drier on a board, then take off the drier from the pile and carefully lift the fold and place it on the fresh drier; put on this another drier, and so on, building up the pile again as at first. Spread the driers that have been used, to dry, and have them ready for the next change. Do not open the folds to look at the plants until the paper no longer feels damp, as they should not be disturbed. You will see that an abundance of driers will be handy. You can tell after a little experience when the plants are dry; they become dry to the touch, and stiff enough to hold their shape when lifted. No rule can be given, as the plants vary greatly in the time required; some dry in two or three days, and others will require a week or more. Lay the plants away in the folds until ready to arrange them, and in a place free from dust. You of course will place with each a label with the name of the plant and place and date of collecting It takes long to describe, but is not near so difficult as it seems. It is well to place the driers in the sun, and use them dry and warm when you change. The more rapidly plants are dried the better will the colors keep, but there are some plants which will turn black on drying, no matter what care may be taken. The Indian pipe, which is pure white, is one of these. In very damp weather it will be necessary to dry the driers by the fire. It is better in pressing to assort the plants, and not put large and small ones together in the pile. Separate each day's collection by a board or pasteboard.

June.

Is it not strange that we do not know the reason why several of the months are called by the names we daily use for them? We told you last month that there was much doubt why May was so called, and there is quite as much trouble about June. Some say June was named after Juno, one of the ancient goddesses; others that it was named in honor of Junius Brutus, the Roman Consul, but the best reason of all is that it is the month dedicated to the young men, who in Latin are called *juniores*. But there is no good reason why it should mean young men and not include young women, and then you know young men and women may be *very* young. Here's a discovery! June, from *juniores*, is nothing more or less than the young folks' month—the Boys and Girls' month! Yes, that's it. Hurrah for June! the youngsters' month! That's an enough sight better reason for the name than any ancient heathens or their gods.—Why shouldn't it be the young folks' month, for with us it is the pleasantest of all? It is bright and fresh and gay and full of life and sweetness, as all young folks should be. Yes, children, claim June as your own month; if any care to dispute it, say that you are juniors, and even *juniores* if they prefer it, and it is much better for the month to be called in your honor than in that of Juno, who, if she ever existed, was a very disagreeable person, or Junius Brutus, who has been dead over 2,000 years, and isn't of half so much importance as one live junior. It's your month.

That Little Arbor.

Florence B. thinks she can make, with her brother's help, a little arbor in her little garden, and wants to know what plants will climb quickly, and can be easily got. She has but little money to spend for seeds and plants, but she knows that with some brush and strings she can make an arbor, which will be nice to sit under.—A good idea, Miss Florence—but in the first place, unless you have a *big* brother, we fear you will not make it strong enough. Vines, when they grow up, are heavy, especially when wet, and the winds take a strong hold of them. If you can get some slender poles, or long brush, you can have them set in the ground in two rows, and then bent over, brought together from opposite sides at the top, to make an arch, and tied there. Then you can run strings from one pole to the other, horizontally, on each side. It would be well to have it tall enough for a grown person to stand up in, as you may have company, and it should be wide enough for several young people, and a little table. You can make nice enough seats out of boxes, and all the neater if you can find something to cover them with. But for the vines—the two easiest things to get are morning glories and beans.—"Beans!"—Yes, do not despise them. Limas have beautiful foliage, and how they run! If you can get scarlet-runner beans, you can have flowers too; otherwise plant morning glories with the beans, and let them grow together; put three or four seeds of each near the foot of each pole of your arbor, and as they grow, train them where you want them; use strings where needed. You can buy a number of vines of the florists, but these will cost quite a sum, while the beans and morning glories will make just as good a shade, and cost almost nothing.

The Broken Arm and the Sympathizing Crows.

He hardly knew how it happened.—"You see that Jim and I were both running for the ball, and somehow I went right down, fell upon the ball, and when I came to pick it up, I could not. My fingers wouldn't move, then I felt faint, and didn't know any more about that game of ball."—That is the way Fred described it after the doctor had been and put the arm in splints, and his mother had sufficiently recovered from her anxiety to talk with him about his broken arm. A broken arm! and nothing to do but wait for it to get well; nothing can be done to hasten it, but Fred must lie there and be patient. It pained him often so that he could not read, besides it was tiresome to hold the book in one hand. It was haying time, and extra hands in the fields made extra work in the kitchen; father and brother must be in the hay, and mother and sister were so busy, that Fred was left alone a good part of the time, and had to depend upon himself. He could hear the rattlety-click of the mower, and as a load of hay went by to the barn, he could get a sniff of its odor. Oh how sweet it was! but that was all that he had to do with the haying from which he expected so much fun. His sister had brought her pet geranium and set upon the window-sill for him to look at; he thought he would watch and try if he could see it grow; so when he found that at the end of half an hour it was not a bit taller than before, he said to himself—"I know it does grow, but how very slow it is; it seems to me that everything is slow; here is this arm of mine—the doctor said that 'in youth a simple fracture unites with great facility'—and grandmother, who came over when the doctor did, said—'law, yes! young 'uns' bones knit kindly'—which, I suppose, means the same thing, but doesn't sound so learned. Well, here I am—let's see how long I have been here—only five days! It seems to me like three weeks."—And then Fred began to get impatient.—"This arm of mine, will it *never* get well!—'Never'—suppose that when our bones got broken—they could not be mended! fearful to think of. It is wonderful that bones so hard, and lifeless as they look, should grow together again. We can't put on anything to stick 'em together just as you'd glue up the broken arm of a chair, but they just get the ends nicely together and bind them so that they will stay there, and it gets well itself. I asked the doctor to tell me about it, and as there were no old folks around, he didn't use any big words, and I thought I understood him. Let me see if I can remember what he said—it was something like this."—"You see, Fred, that a bone isn't just like a piece of iron or marble, it has structure—parts—while the bones of our bodies are a framework, to strengthen them, they are a *live* framework, and the bone in your arm is as much alive as the flesh over it, and, like other live things, has to be fed; a bone looks solid, but minute channels run all through it, so that blood may be carried to all parts to feed or nourish the bone. Then there is the earthy part of the bone, and the animal part; if you take the bone of an animal and soak it in an acid called muriatic, that will dissolve out all the earthy part of the bone, which is a kind of lime compound called phosphate of lime, and leave the animal part of the bone, or cartilage, and this will be just as big as the bone was, but it can be bent, and if the bone was a long one, the cartilage may be tied into a knot; you see that this cartilage would never do for our frame-work, we need something that can not be bent and tied into knots: so all through this cartilage there is deposited in every part of it the lime phosphate, or earthy matter, to stiffen it, just as your mother puts starch into your collars to make them stiff. There is a great deal more about bone that you may learn some day, and some interesting things I can show you with the microscope when you come to my office, but I had to tell you so much in order to explain about the mending of the broken bone. It is a wonderful provision of nature—which is only another way of saying that God has made it so—that when living bodies are injured, there is generally at once an attempt to repair damages. When you cut off a branch of a tree, the bare surface will, after a while, be covered with new wood and bark; if you cut your finger, there is an attempt at cure at once, though you don't see it; so when a bone is broken, it, so to speak, begins to repair itself at once; I can't tell you the whole story about it; but this is, in short, what happens: a portion of cartilage is formed between the two ends, as the beginning of the repairs, and afterwards this is strengthened by the earthy matter, the lime, which the blood deposits in it particle by particle; the first joining is not very strong, but holds the bone together, until after a while the new bone that joins the parts is as hard and strong as ever. So you see, my boy, why I keep your arm tied up so tightly. We must help nature all we can, and give her a chance to mend the break."...."Yes," said Fred, "that's about the way the doctor told it, and how wonderful it all is, first the cartilage and then the bone slowly made stiffer and harder with the lime phosphate. It is slow work, this mending, but I'll try to be patient. How much sooner I can go out than if it had been my leg, though! That's one comfort—to know it is not as bad as it might have been. Then how kind everybody is when a fellow has an accident! Father came in yesterday noon, he thought I was asleep, and I saw two big tears run down his brown cheeks; then sister brought me the plant she thinks so much of; Jim found a patch of wild strawberries at the edge of the meadow, and picked them for me; it seemed to me as if no garden strawberries ever could be so good—else I somehow tasted Jim's goodness in them. If they are too busy to stay much in my room, I see something many times a day that shows they are all thinking of me. But the funniest thing of all! There's that Sam Rounds, who lives up just beyond the red bridge; Sam's a little red-headed, speckle-faced fellow, and at school last winter a big fellow imposed upon Sam, and I just took Sam's part. When Sam heard I had broken my arm, he wanted to do something to show me that he was sorry, and he sent me—of all things in the world!—a pair of young crows that he had been bringing up by hand and taming. They have made themselves quite at home; their wings are clipped, and they can't fly, but Sam put a pole at the window, and showed them the way, and they come in every day; they are almost too tame, but they are so amusing, look so solemn, and act so comically, that I have to laugh. They seem to be in partnership, for the other day one pretended to be very sympathetic, and cawed and grimaced at me, while the other all the while was trying to steal the spoon out of my cup; they have a great liking for anything bright, and will carry off and hide such things. They are amusing now, but I am afraid they are too mischievous to keep. Mr. Fuller had a tame crow, who would follow him all about his garden, but when he was away, the crow would pull up every label he put out to mark where his seeds were sown! Mother and sister wouldn't like that, so I must try to get rid of them without offending Sam....Well, old arm, how are you getting on?—is that phosphate of lime being deposited all right in the cartilage?—the doctor called it 'process of ossification'—to mother and grandma—keep at it and ossify—that's a good arm.—But, oh dear!"

THE SUNFLOWER GIRL.—(See page 200.)

THE BROKEN ARM AND THE TAME CROWS.

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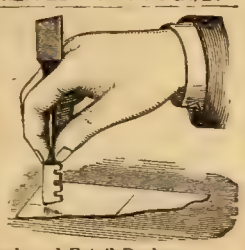

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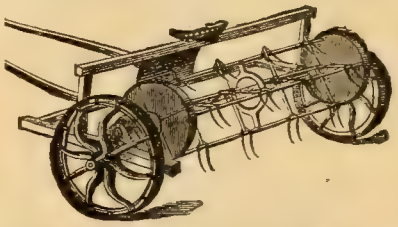

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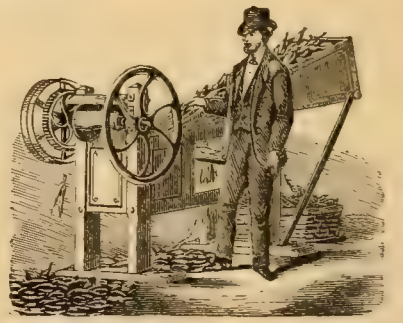

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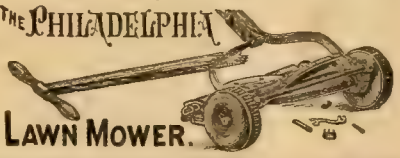

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Chloride of Sodium	97.75	98.28
Sulphate of Lime	1.43	0.91
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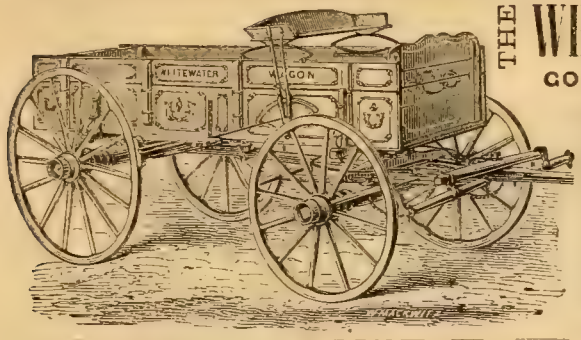

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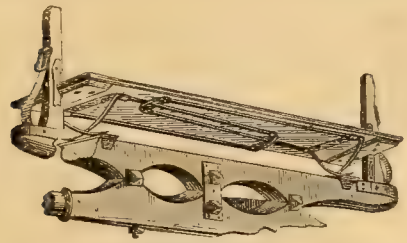

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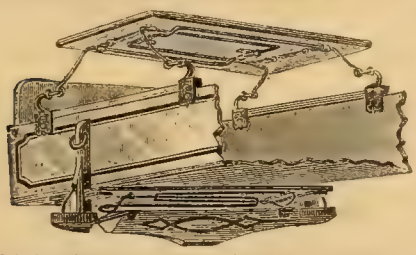
2	2,000 "	11 00	6½	6,500 "	20 00
2½	2,500 "	12 00	7	7,000 "	21 00
3	3,000 "	13 00	7½	7,500 "	22 00
3½	3,500 "	14 00	8	8,000 "	23 00
4	4,000 "	15 00	9	9,000 "	24 00
4½	4,500 "	16 00	10	10,000 "	25 00
5	5,000 "	17 00			

See large cuts in *American Agriculturist* for Nov., 1874, and Feb. and April, 1875.



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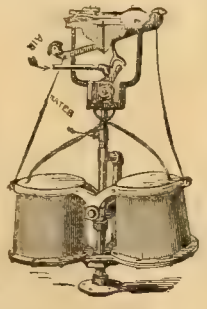

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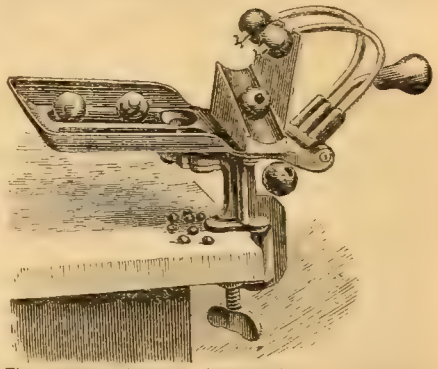

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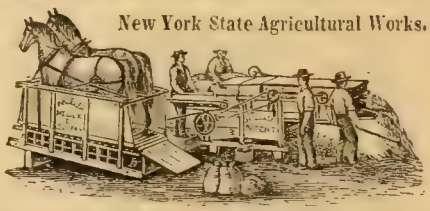

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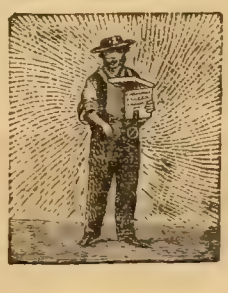

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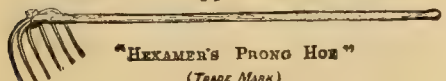

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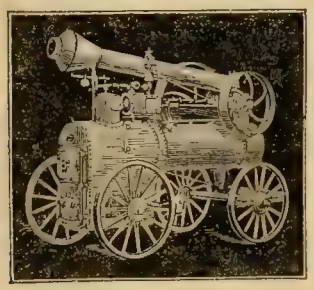

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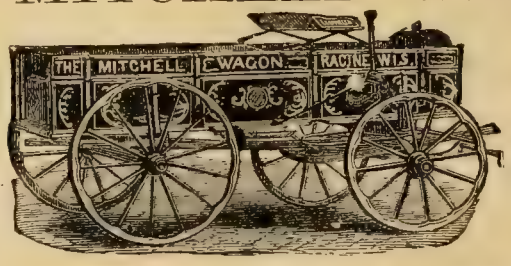

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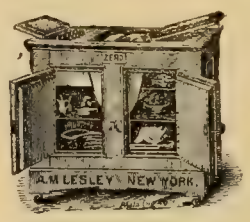

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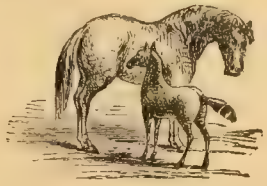

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 211.

To Prevent Galls.—"P. O." To prevent collar galls on horses in the summer time, wash the shoulders every night with cold water, and rub dry with a towel. Also scrape the inside of the collar clean, and keep it very hard and smooth. Collar pads stuffed with wool, are injurious rather than helpful, and collars lined with flannel should be avoided. A leather lining is the best, and it should be kept very smooth by occasional dressing with fish-oil, and burnishing with a smooth piece of hard wood. The collar should fit snugly but not too tightly. If a collar fits well there will seldom be any galls; if it does not, no amount of care will prevent them. A smooth leather pad at the top of the neck, is as good as any other kind.

Culture of Mangolds.—P. Ott. An article on the culture of mangolds, was published in the "Ogden Farm Papers," of January, 1873.

Size of a Cistern.—"P. A. V.," Dakota Terr. A round cistern, 8 feet in diameter, and 10 feet deep, made rounded at the bottom, will hold 100 barrels of water. For a four inch wall (or one brick thick, placed flat and lengthwise in the wall) 1,680 bricks will be required. One barrrel of cement, and one cubic yard of sand (or 18 bushels) will lay the brick and cover the bottom.

Scrofula in Pigs.—"J. H. H.," Stephenson Co., Ill. Pigs are frequently subject to scrofulous diesases. These appear in the shape of swollen heads, sore mouths, ulcers on the tongue and jaws, and gangrene of the extremities; sometimes known as loss of tail and hoofs. When young pigs are thus attacked, there is no remedy, and they die from inability to suck. A sow which produces such pigs, should not be bred from, and will not be wholesome food if made into pork.

Culture of Castor Beans.—"B. W.," Nodoway, Mo. After the young plants appear above the surface, it is necessary to cultivate the ground as with a corn crop. The young plants are too tender to be harrowed. Two plants are left in the hill, and are cultivated or plowed five or six times. Early in August the crop will begin to ripen, and the pods are gathered twice a week until frost comes. To harvest the crop, drive a wagon over every fifth row, gathering the pods that are turning in color from two rows on each side, and at each gathering always pass over the same row in the same direction, gathering the pods ahead of the wagon on that row. The gathered pods are spread in a yard surrounded by a close fence five feet high, and are stirred and exposed to the sun until the beans pop out. If rain occurs, they must be covered, or they will be injured.

Saving Rennets.—Since the late increase in the manufacture of cheese, the demand for rennets has become very lively. The cheese factories use a great many of them. A large number are wasted, because the manner of saving them is not generally known. The stomach of every milk-fed veal that is killed, or every "deacon," should be saved. The fourth stomach only is taken. This is not the paunch, but that next to and beyond the "maniplies," and that from which the gut leads. It is cut off close to the maniplies and the gut, and is turned inside out, to empty the curd, which may be in it, but is not washed. It is then salted well, and turned again. The outside is then well rubbed with salt, and a handful of salt put inside. It is then stretched upon an elastic bent twig, and hung up to dry. When dry it is ready for sale. Any produce dealer in New York will buy them, or any cheese factory.

Insects on House-Plants.—"Mrs. L. M. N." has tried tobacco for the green fly, and washing for the green spider, and still her plants are tormented, and the insects grow fat. We can only say that these applications never fail with us, and there must be a want of thorough treatment. Put the plants in a large box, or under a barrel, where they can be thoroughly smoked with tobacco, and at the end of a couple of hours give them a thorough showering. Repeat it every three days, and the green fly will give it up at last. For the red spider, wash the smooth-leaved plants with a wet sponge on both sides of the leaves. Lay the others on their sides, and thoroughly shower the undersides of the leaves; repeat this every two days, and keep at it, until the insects disappear. Perseverance will conquer them.

Sale of Grade Norman Horses.—Fifty head of grade Norman horses, mostly half to three-quarter blood, were recently sold at public auction at Summit, Cook County, Ill. Colts of two to three years were sold at low prices, ranging from $50 to $375, and brood mares brought only from $100 to $260.

To Kill Wild Oats.—"J. B.," Saint Paul, Oregon. There is probably no plant that a thorough summer fallow will not kill in time. By perseverance the ground may be totally freed from vegetation of all kinds. But there are some plants the growth of which is actually encouraged by partial summer-fallows, badly conducted. A summer-fallow to be effective must kill every sprouting root or seed while it is in its early tender stages by constant plowing, harrowing, and cultivating. Perennial roots must be harrowed out, and those that possess great vitality must be picked off and removed from the land. Such a summer-fallow is costly, and it is almost equally effective to grow a succession of hoed crops, such as corn, potatoes, or roots alternated with crops of quick and close growth, such as peas, buckwheat, flax, or clover. To grow fall wheat upon foul land is only to perpetuate the weeds.

How to Use Muck.—"C. L. S." A supply of swamp muck of good quality is a valuable accessory to a farm. There is no necessity to haul it to the barn-yard and back again. A certain quantity might be serviceably brought to the barn and used when dry as bedding for the stock, leaving the straw to be fed. But it would be better to carry the barn-yard to the muck than all the muck to the barn-yard with a great cost of labor. The better plan in such a case is to draw the muck to the field where it is to be used, after it has been dried for some months, and there mix it with the manure from the barn-yard, and let the whole ferment together. Other portions drawn and mixed with fresh dry-slacked lime in the heap as it is made; the muck soon rots, and we have found it very useful as a dressing for grass. Intelligently used, muck is valuable, but otherwise will hardly pay for the digging and hauling.

Calcareous Soils.—"L. L.," Washington Co., Texas. A calcareous soil may be greatly improved by plowing in green crops, such as buckwheat, clover, or the southern cow peas.

"This is Foolishness."—"J. G. J.," Audrain, Mo., thus relieves his mind after reading a statement in the *Agriculturist* of January, 1875, that three horses with a double furrow plow can do as much work as four horses with two single plows, and frequently the same team will do double the work with a double furrow plow that they can do with a single one. This may *seem* to be foolishness to some, but it is a fact. One great saving in using double furrow plows is rarely thought of, there are only half as many turnings at the headlands, and all that loss of time is saved. Besides the horses in this case in plowing two acres only walk as far as they would in the other, to plow but one acre, and the saving of labor in carrying their weight about is another great gain. Double furrow plows must soon come into use, especially upon mellow, easily worked lands, so that one man can do two men's work. Farming is behind all other mechanical industries in time-saving machinery, especially so far as regards plowing.

Corn for Green Manure.—"J. A. Y." We have not much faith in corn for plowing under as green manure. The land that will grow a crop of corn will grow buckwheat, peas, oats, or spring rye, any of which would be more easily turned under, and some of which would be better fertilizers than corn. Two crops of buckwheat can be grown and turned under while one crop of corn is growing. But if there is barn-yard manure enough to cover the ground, it is waste of time and labor to grow green crops to plow under. It would be as well to let the ground lie until June or July, and then plow it and cross-plow again in August for a wheat crop, and next spring sow down to clover, plowing that under the second year.

Sales of Short-Horns.—A large number of Short-Horn cattle have been disposed of at recent sales. At Bloomington, Ill., on April 28th, 140 animals, the property of Messrs. Smith, Nicolls, Franklin, Funk, and Duncan, sold for $48,399, an average of $345.70. The highest price being $2,000 for a cow of the Princess blood. On April 29th, at the same place, the herd of J. H. Spears & Son, consisting of 40 head, were sold for $46,370, an average of $1,159.25; the highest price being $10,500 for the bull, 21st Duke of Airdrie, 4 years old. The herd of J. H. Pickerell, of Harristown, Ill., numbering 23 head, sold for $29,005, an average of $1,261.09. The bull Breastplate sold for $6,100. In Iowa two large herds, the "Wapsie" herd of S. W. Jacobs, of West Liberty, of 82 head, and the herd of Milton Briggs, of Kellogg, Jasper County, of 139 head, have been disposed of. The first sale amounted to $49,215, an average of $727 for cows, and $274 for bulls. The second sale realized only $37,630, an average of the small sum of $279 for cows, and $235 for bulls. Mr. Briggs' herd was in poor condition, most of the bulls suffering from mange, which accounts for the low average. Several other less important sales have occurred which, with those mentioned, have been the means of distributing a large number of good animals at very reasonable prices, amongst farmers in whose herds these animals will undoubtedly work great improvement.

Wolf Teeth in Horses.—"J. S. G. L.," Juniata County, Pa. Wolf teeth do not cause blindness in horses. They are in no way injurious to a horse, but the popular idea to the contrary arises from the fact that they appear at the time when the colt, then in its third year, is cutting its permanent teeth. These displacing the first teeth either appear in their place or by the side of them, in which latter case the displaced teeth are called wolf or wolf's teeth. They generally fall out, their roots being absorbed, but if they remain no harm occurs. Diseases of the eye have no relation to these teeth, but there are abundant causes in the usual ill-management of colts at this critical period, and afterwards, for those diseases to which horses are subject.

Trapping Muskrats.—"J. H. J. C." Directions for trapping muskrats are given in the *Agriculturist* of March, 1872.

Death of a Horse from Bots.—"D. C. S.," German Settlement, W. Va., asks what killed his horse. It was taken with a sudden chill after feeding and watering, and then with a sweat, while its legs were cold. He administered medicine for the flatulent colic but to no purpose. The horse lived in this state about sixteen hours, sometimes striking and kicking, but never tried to get up, and at last died very suddenly and easy. When opened there were found two small holes in his intestines, and just enough had passed out to stain the outside. He found the communication between the stomach and first intestine filled with bots. It was closed up so tight that nothing could pass through. The stomach was nearly full of liquid, caused by purgatives given him, and nothing was found in the colon or intestines, nor even in the rectum. Now the question is, what killed the horse? was it the bots, or was it those holes in the intestines. The bots had stuck themselves fast to that canal or small communication.—We should say the horse died of the obstruction of the pyloric orifice of the stomach. The rupture of the intestines was probably accidental in the postmortem examination.

Tall Meadow Oat Grass.—"S. K." *Arrhenatherum avenaceum*, or tall meadow oat-grass may be sown exactly as timothy is sown. It is an excellent permanent grass for meadows or pastures, as it starts early, and has a rapid late growth after mowing. The bushel weighs seven pounds, and three bushels of seed should be sown upon an acre. Clover may be sown with it as with timothy.

How to Become a Locomotive Engineer.—"C. C. G." To become a locomotive or any other kind of engineer, the business should be learned by apprenticeship in the shop. A thorough engineer must have learned his business in the mechanic's shop first, and know how to build an engine. There are many, however, who have learned their business by serving first as fireman on an engine, but they can never become as competent as those who know everything about the construction of their engines. To go on a train as a brakeman will never teach a young man to become an engineer.

Agricultural Machinery at the Centennial.—The Centennial Commission is making thorough provision for the reception and display of agricultural implements. A section of the Agricultural Hall will be set aside for the exhibition of farm appliances. Within the Hall will be steam-power for driving machinery. It is contemplated to test implements in the field. Manufacturers, designing to compete in the field, will be required to use the same machines they offer on exhibition. Inquiries may be addressed to the Chief of Bureau of Agriculture, Philadelphia.

Pomology at the Centennial.—It is intended to have a continuous fruit show at Philadelphia next year, from May until November. Some of the societies are already moving in the matter.

Stock-Raising in the West.—"W. S.," Washington. The growth of grain in the west is not nearly so profitable nor so safe as raising stock, but it requires less capital. The capital required to begin with stock would be somewhere about the following, say 200 head of selected Texan heifers two years old, at $7 per head, $1,400; 4 young, pure-bred Short-horn bulls, purchased in Kentucky, at $150 each, $600; 640 acres of land for winter pasture which may be bought well located for this purpose, for about $5 per acre, payable in ten year's time, fencing, corralls, shelters and huts say $1,500, including payment on the land; there will be in addition the cost of attendance, cutting hay, and some corn for winter feed, which can hardly be estimated, for three years before any sales can be made, which will doubtless use up the balance left out of $6,000. Summer pasture on unoccupied prairie will cost nothing for many years. The first income would be in the fourth year, when 70 or 80 three-year old steers, worth possibly $30 a head, would be ready for sale.

Book upon Fish Culture.—"M. F.," Clarion Co., Pa. There is no book published upon fish culture that will teach any person how to make money by raising fish in ponds at 15 cents a pound. Fish culture will do for an amusement, but not for a business to make a living by except in very rare cases.

Cranberries on Trees.—A correspondent at Albion, Ill., writes: "Do not cranberries grow on a vine, on or near the ground? Is there a variety which grows on a bush or tree? The famous 'poplar peach tree' agent has sold and delivered a good many cranberry bushes in this county, which are four or five feet high, and resemble a snow-ball bush very much."—Cranberries grow on a weak, prostrate vine, and near the ground. "High-bush Cranberries" grow upon a shrub, but these are no more cranberries, than horse-chestnuts are chestnuts. No wonder the bushes look like Snow-ball bushes, as this High-bush Cranberry (*Viburnum opulus*) is the wild and, so to speak, single state of the ornamental Snow-ball. If the agent sold these shrubs as *cranberries*, you can prosecute him—if you can catch him—for swindling. If he sold them as "Bush-Cranberries," and people bought them supposing they were regular cranberries, it is their own fault. Tree-peddlers are very excellent people to avoid.

Hyacinths.—"Reader." Bulbs that have flowered once, are worth nothing to force again. They will give an inferior bloom, if set in the garden, and may be kept dry in the pots until fall, when they may be planted. We did not reply by mail, as requested, as we could not make out your P. O. address.

Popular Music Books.—We have received from Messrs Lee & Walker, music publishers of Philadelphia, The Young Organist's Album, The Music Teacher, The Musical Manual, The Gospel Singer, School for the Parlor Organ, Melodeon, and Harmonium, Musical Pastime, and Clarke's New Method for the Piano-Forte.

Crossing Wheat and Rye.—It would really seem as if Mr. Stephen Wilson had succeeded in making this cross. He tried oats and barley, and Couch-grass as well, and got a good many seeds; but, of those that grew, the wheat came up wheat, and the oats oats, excepting two plants, which came from grain of a wheat plant fertilized by rye pollen. These plants, which were exhibited at the Edinburgh Botanical Society, looked intermediate between wheat and rye, and so did the ear. But its flowers produced no good pollen, and set no seed. So that was the end of it.

The Gumming of Fruit Trees has been investigated by a distinguished French physiologist, Prillieux. It is a true disease, mostly of the cambium. It begins in single cells, in which the starch is transformed into gum; and this sets up, by a sort of contagion, an unnatural action in the surrounding cells, which become unduly filled with starch, and then this starch turns into gum. To cure this diseased action, strong incisions in the bark are recommended. These excite an active production of cells at the surface, and so divert the nutriment from this abnormal activity, to a different and more healthful action.

As to buying a Farm.—"J. H.," New York. $2,000 would go but very little way towards buying a farm near the city of New York. Many persons have gone into new western states and taken up homesteads, or bought cheap lands from railroad companies, with even less than this sum, and have succeeded in a few years in making themselves independent. Farming in the eastern states now requires a large amount of capital to be invested, and to use that capital with profit, requires a large amount of skill and experience. In the west, small capital used with caution, an aptitude to learn, and patience, perseverance, and sometimes long suffering with difficulties, all in the end accomplish the same results as money and practical skill in the east.

Sheep Farming.—"Chicago." To keep a flock of pure bred Cotswold, South-down, or Leicester sheep, requires skill, experience, capital, and a location fitted for raising the needed root and fodder crops. It is easier to keep a flock of grades of either South-downs or Cotswolds. There is more profit in keeping sheep on cheap land 500 miles from market, as the prairies of Kansas or Nebraska, than on high priced land 100 miles from Chicago. Sheep farming as a special business can not afford to pay $50 to $100 an acre for land; the difference in the price of land would pay the small difference in freight many times over. Besides, a small flock alone will not pay for the necessary attention, which could as well care for a flock of 1,000 or more, as one of 200.

Prolific Sheep.—"Shepherd." A ewe may live and breed 14 or 15 years. Merinos are longer lived than the large breeds. An English breed, known as Dorset, is probably the most prolific kind of sheep. A flock of 400 is mentioned, that last year brought to maturity 515 lambs. 115 pairs of twins were raised without the loss of a ewe, and the twins were as forward lambs as the singles. A cross bred Cheviot ewe is recorded as having in 15 years produced 30 lambs, 3 singles, 9 doubles, and 3 triplets. This last is the most prolific sheep we have heard of, but to get a whole flock of such ewes, would be an impossibility.

Illinois State Farmers' Association.—We are indebted to W. C. Flagg, President of the Illinois State Farmers' Association, for a copy of the Proceedings of the third annual meeting. Of the various addresses, of which full reports are given, that of the President is of especial interest. He describes the formation, management, and benefits of a local farmers' club, with which he is personally connected, and the practical hints given in his address, will be found of great value. The report is published in pamphlet form, and a number of them have been printed for sale, for the double purpose of adding to the resources of the association, and of popularizing its objects. Copies can be procured of the Secretary, S. M. Smith, Kewanee, Henry county, Illinois.

Colic in Horses.—"W. W. L.," Before one can treat colic in horses successfully, or even intelligently, the cause should be known. It may be due to indigestion, improper feeding or watering, to inflammatory condition of the intestines, or to worms. The last named is a frequent but unsuspected cause. A case is known in which a horse which died of supposed colic, was found to have over 1,200 worms in his intestines. Worms not only cause spasmodic inflammation when numerous, but gathering in knots, sometimes cause actual stoppage. In your case the hide bound, thriftless appearance, and foul appetite of the horse, would all point to worms as the cause of the trouble. If worms are present, the horse may probably be relieved by giving 2 ounces of spirits of turpentine in a pint of linseed oil, repeating the dose in 10 days, or give in the food for three successive mornings, half a dram each of calomel and tartar emetic, and after this a pint of linseed oil. If the horse is valuable, consult a veterinary surgeon always, but rather trust to your own judgment, than employ a quack horse-doctor.

"Walks and Talks" Correspondence.

Preserving Shingles.—"S. A. B.," asks if he can "profitably use anything to prepare cut shingles before laying, so as to make them more durable."—I think it would pay to saturate them with petroleum. If this is not convenient, apply the petroleum two or three times after they are laid. Take a small watering-can, stand on top of the roof, and sprinkle the petroleum over the shingles, and let a man at the same time stand on a ladder or platform at the eaves, and any petroleum that runs into the gutter, can be applied with a brush to the shingles below the gutter. If the weather is warm, and the shingles dry, the petroleum will be absorbed rapidly, especially at the ends and sides of the shingles. You will probably have to do part of the work yourself. I have rarely found a man who knew how to get enough petroleum into the wood.

Sick Pigs.—"A. C.," Wis., has a litter of seven pure-bred Poland-China pigs, four months old, that are sick. They are "troubled with wheezing and short breath. They are in good condition. Have a warm, dry nest, plank floor, stone walls, crib overhead, and yard attached. Food, corn-meal and oats ground. Also dry corn and dish-water from the house."—This is high feeding for such young pigs, and they will probably not stand it as well as the smaller breeds which mature early. I should stop the dry corn, and give bran or middlings instead of the corn-meal. Let them have plenty of exercise, and if possible the run of a clover or grass pasture.

Oats and Peas.—"G. T." I have no trouble in harvesting or threshing this mixed crop. A Johnston reaper will cut them up clean, no matter how badly they may be lodged. The machine rakes them off into bunches. If the weather is fine, and likely to continue so, we turn these bunches the next day, and as often as is necessary. In two or three days the crop will be sufficiently cured to draw in. We open a way for the wagon by throwing two rows of bunches one on each side of the wagon; and then two men, one on each side, pitch the bunches on to the wagon. This is far better than putting them into cock. If well cured, the straw makes excellent fodder. We have no trouble in threshing. I believe the "threshers" grumble a little, but they always want my job the next year, and so I suppose they find no real difficulty. We thresh with a ten-horse power machine, and as I use the straw for fodder, I am not particular about knocking out every oat, and so we lower the concave, and the crop goes through lively, and very few of the peas are crushed. A good fanning mill will separate nearly all the peas from the oats.

Feeding Wheat to Horses.—"G. B.," of Nebraska, writes: "At your suggestion I boiled my wheat, and scattered it while hot over my chopped hay and straw. I think I fed my wheat to better advantage than most of my neighbors, and better also for your advice. I wet the hay and straw before adding the boiled wheat."

Western Farming.—"G. B.," of Nebraska, also says, "I have 200 acres, and shall put in 110 acres of wheat, 30 oats, 40 corn, 10 barley, 5 rye, and 5 millet. I have three teams and the necessary machinery. Notwithstanding grasshoppers, and all other drawbacks, I believe farming will pay here if a man will only stick to it and farm understandingly. This country is adapted for wool growing, but farmers are so poor they cannot buy sheep. I hoped to have had some before this, but last year will put me back at least two years. If I have a good crop I shall be able to get some this fall."—I sincerely hope you will have a good crop. You certainly need more stock. Two hundred acres, and *all* in grain, may be best for a few years, until you get a good start, but your aim must be to keep more cattle, sheep and swine. If a farmer raises his own stock, very little capital is required; a few sows, or ewes, or cows, in three or four years, will give you more stock than your farm can carry. The great thing is to make a beginning.

Combing Wool.—A large wool dealer in Philadelphia, who examined my flock of sheep last winter, writes me that my pure-bred Cotswold wool, well washed, so as to shrink not more than 16 per cent, would be worth in that city 65 cts per lb., while my grade Cotswold-Merino wool would be worth 70 cents per lb. Clothing wool of same quality would be worth 56 cents. "If you were here," he writes, "I could take you to the wool dealers, and show you hundreds of thousands of pounds of wool, ranging in value from 15c. to 35c. per lb.; but of this choice, grade Cotswold-Merino wool, you could not find a single pound, and yet in your "Walks and Talks," No. 100, you compliment farmers on being intelligent men! I will not discuss this point, but I think that farmers, as a class, are very much in need of information in connection with their business."—All this sounds very well. And I feel quite sure that my correspondent means all he says. There doubtless is a growing demand for choice combing wool, and it probably does seem strange to the dealers and manufacturers, that intelligent farmers do not grow more of it. But when I take my wool to market, I do not hear so much about the scarcity of my kind of wool! I have never yet been able to get these high prices. I once sent my whole clip to a large house in New York. Prices were nearly as high then as they are now, and yet I did not get over 35 cents per lb. for the unwashed Cotswold wool, and I think 32 cents per lb. for unwashed Merino. I will not say whether we farmers are intelligent or not, but we certainly do need "more information on this part of our business." Joking aside, however, I suppose it to be a fact that combing wool is very scarce, and that those of us who grow a good article, will sooner or later get a fair price for it. I suppose, too, that much of our wool which ought to pass for combing, is not up to the desired standard. It may be long enough, but it is cotted, or hairy, or breaks in the middle—owing to great and sudden change in the feeding or management of the sheep. I am sure that we *can* raise all the choice combing wool required in this country, and raise good mutton at the same time.

Clover Hay for Pigs.—"J. R." I can only repeat what I have before said, that my breeding sows kept in good condition for six or eight weeks last winter, on clover hay, soaked in water and mixed with a little corn meal, and then steamed. The clover should be cut early, say the middle of June, or just as it comes into flower.

Curing Clover Hay.—"J. R." Early cut clover requires more time to cure than when the clover is not cut until it is in full blossom, and some of the heads turned brown. Neither will the early cut yield as much hay per acre. I would cut a little of it early, for pigs, milch cows, and ewes suckling lambs. The main crop I would let stand until in full blossom. The latter I cure as follows: I start two mowing machines in the afternoon, and keep them cutting until dark. The next morning, as soon as the dew is off, or as soon as the first cut clover is partly cured on top, a boy goes over it with a self-lifting wire horse-rake, and pulls it up into light windrows about six feet apart. In an hour or so these windrows are turned and shaken out again where necessary. If the crop is heavy and green, it may be necessary to go over it again with the rake, and also turn it again. About 4 o'clock we rake it into large windrows, and put it into cock. Sometimes we let it remain in cock for two or three days, until cured; but usually we open the cocks the next morning, and spread out the greenest of the hay, and if necessary turn it an hour or two later, and draw into the barn or stack in the afternoon. The real point is to avoid exposing the hay to the dew or rain after it is partially or wholly cured. *When green* a heavy dew, or even rain, hurts it but little if any; while such a dew would seriously injure partially cured hay. It is for this reason that I commence cutting in the afternoon, and let the grass lie exposed all night; but the next night we are careful to get it all into windrow or cock. These are the main outlines of my plan; but the details vary according to the weather and other circumstances. If I was sure of the weather, I would let the hay remain in the cock until ready to draw in. At any rate, let it be well cured, and especially be careful not to draw it in when there is any dew on it. If you *must* draw it in when damp from rain or dew, sprinkle a little salt on each layer as you put it in the barn—say two or three quarts to a ton.

Are there Two Varieties of Essex Pigs?—"F. H. H.," Aurora, Ill., writes, "I am breeding Essex hogs. I got my stock from reliable men. I believe them to be full-blood Essex; but they are not like yours. I saw recently at Downers' Grove, three Essex pigs raised by you. They are as fine-boned as the Suffolks. Mine are longer legged and coarser. Now are there not two varieties of Essex pigs in this country, one kind fine and short-legged, the other coarser and longer-legged?" I have aimed to get my pigs fine-boned, with short legs and short noses. You can breed them coarse or fine. It can be done by selection and by feed. High feeding when young, has a tendency to make the head, ears, and legs small. I do not think there are two distinct varieties of Essex. But in the hands of different breeders, there is much difference in the form and size. I could easily breed Essex large enough to dress 500 lbs. In fact, I had one that dressed 550 lbs. But I prefer them smaller and finer.

Does Tillage Enrich the Land.—"F. M.," Innerkip, Ontario, thinks such is the case, and I very decidedly agree with him. But it may require some years before we see a decided effect. Much depends on the character of the soil. The clays receive the greatest benefit from thorough tillage. No one would think of fallowing a blowing sand. Mr. F. M. calls my attention to a statement repeatedly made by a farmer in my neighborhood, to the effect that in plowing land repeatedly to kill Canada thistles, the soil was so impoverished, that it would not afterwards grow a crop without manure. I have noticed the same thing on my own farm, where I have plowed out stones on sandy knolls—plowing deep, and going round and round the knoll several times. These knolls will not produce good crops after such deep and repeated plowings, without manure—and they would not produce a good crop before, with or without manure. There is little necessity for cautioning farmers on good strong soil, against working their land too much. It may be true that many farmers plow too much land, but certainly few of us plow our land enough.

Swine Raising in the South.—"I think," writes a correspondent at Canton, Miss., "it is easier to grow swine here, than with you. Our winters are so mild, that housing is rarely necessary. I never allow sows to pig in winter. My plan is to have my pigs come the last of February, or early in March, and in September. Everything is then killed or sold, except brood sows, in November and December. My sows in winter, except in bad weather, are kept on orchard grass, and fed corn every night. By farrowing time we have clover as well as grass. In early summer they have the run of my orchard, and keep perfectly fat on fruit and Bermuda grass, without corn. A little later the early pea patches are added to the fruit and grass. Afterwards corn fields with late peas and sorghum cane, bring them to the pen in almost a perfect state. Sorghum is one of the finest and cheapest swine food in the world."—This is a cheap way of producing pork, though I should have thought that it would be better to keep the pigs to an older age on this cheap food, before shutting them up to fatten. Young pigs to grow rapidly, must be fed on rich and easily digested food.

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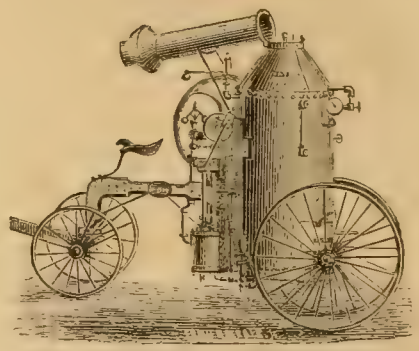

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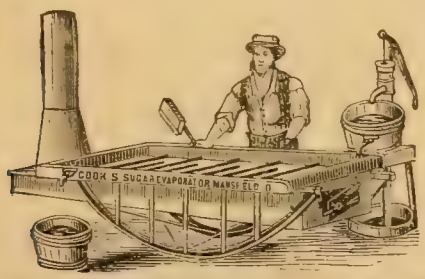

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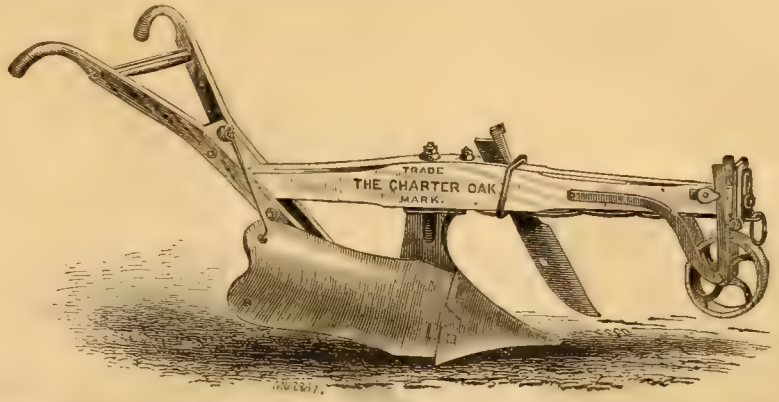

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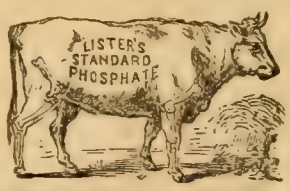

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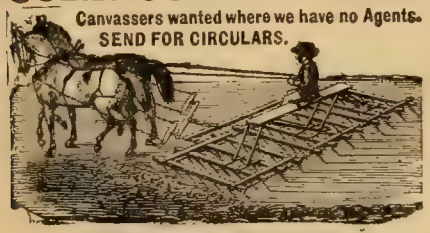

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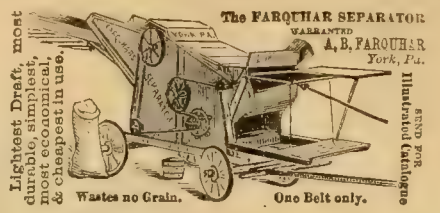

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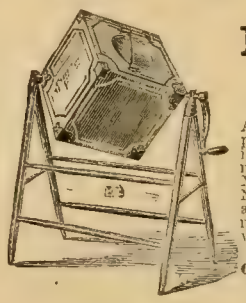

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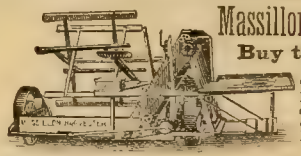

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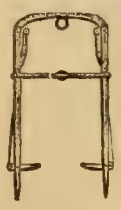

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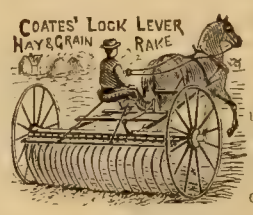

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DEAR SIR:—Several months since I received from Messrs. G. & C. Merriam a copy of their quarto edition of Webster's Dictionary. In acknowledging the receipt of it, I expressly informed them that I did not make it my standard of orthography, and gave them my reasons for not doing so, and for considering it an unsafe standard for American writers to adopt. At the same time I observed the work had so much merit in many respects, that *I made it quite a vade-mecum.* They had the disingenuousness to extract merely the part of my opinion which I have underlined, and to insert it among their puffs and advertisements, as if I had given a general and unqualified approbation of the work. I have hitherto suffered this bookseller's trick to pass unnoticed; but your letter obliges me to point it out, and to express my decided opinion that Webster's Dictionary is **NOT** a work advisable to be introduced "by authority" into our schools as a standard of orthography.

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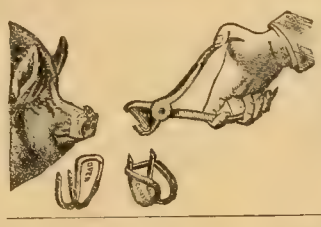

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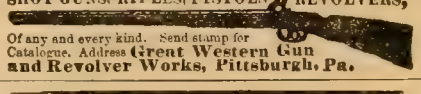

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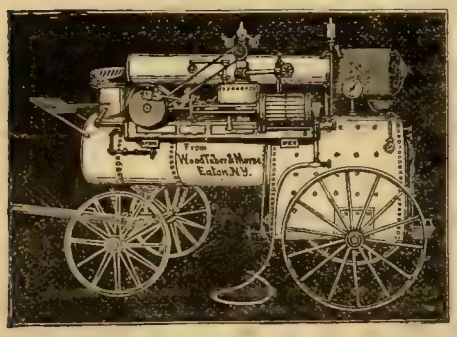

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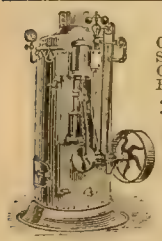

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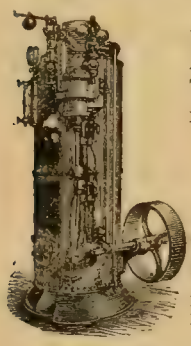

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VOLUME XXXIV.—No. 7. NEW YORK, JULY, 1875. NEW SERIES—No. 342.

LUNCH TIME IN THE FIELD.—(*See page* 254.)—*Drawn and Engraved for the American Agriculturist.*

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Grape Vine Insect.—"G. F.," Lehigh Co., Pa. The insect sent is the Grape Vine Flea Beetle, *Haltica chalybea*, and not a fly at all. It is sometimes very destructive. Hand picking, or shaking from the vines and crushing, early in the morning, when they are inactive, is the only remedy we know of.

A Cistern in Sandy Soil.—"J. L.," St. Croix Falls, Wis. A cistern in a soil consisting of sand and gravel, should be lined with brick, or the walls will be likely to cave in. The brick should be hard burned and laid in cement, and then plastered with a thin coat of cement. The cement used should be mixed with four or five times its bulk of sharp fine sand, while dry, and then with water, until it is thin enough to spread well; mix with water in small quantities, as it is needed.

Calendar for July.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H M	H. M.	H. M	H. M	H. M.
1	T	4 25	7 40	2 22	4 31	7 34	2 28	4 37	7 29	2 35
2	F	4 26	7 40	3 18	4 32	7 34	3 25	4 37	7 29	3 33
3	S	4 27	7 40	sets	4 33	7 34	sets	4 38	7 29	sets
4	S	4 27	7 39	9 23	4 33	7 33	9 18	4 38	7 28	9 12
5	M	4 28	7 39	9 56	4 34	7 33	9 52	4 39	7 28	9 48
6	T	4 29	7 39	10 23	4 35	7 33	10 20	4 40	7 28	10 17
7	W	4 29	7 39	10 46	4 35	7 33	10 45	4 40	7 28	10 43
8	T	4 30	7 38	11 5	4 36	7 32	11 5	4 41	7 27	11 5
9	F	4 31	7 38	11 23	4 37	7 32	11 25	4 42	7 27	11 26
10	S	4 32	7 38	11 44	4 37	7 32	11 47	4 42	7 27	11 49
11	S	4 33	7 37	morn	4 38	7 31	morn	4 43	7 26	morn
12	M	4 33	7 37	0 4	4 39	7 31	0 8	4 44	7 26	0 12
13	T	4 34	7 36	0 28	4 40	7 30	0 33	4 45	7 25	0 38
14	W	4 35	7 36	0 58	4 40	7 30	1 4	4 45	7 25	1 10
15	T	4 36	7 35	1 31	4 41	7 29	1 38	4 46	7 24	1 45
16	F	4 37	7 34	2 18	4 42	7 29	2 25	4 47	7 24	2 33
17	S	4 37	7 34	3 14	4 43	7 28	3 21	4 48	7 23	3 28
18	S	4 38	7 33	rises	4 44	7 28	rises	4 49	7 23	rises
19	M	4 39	7 32	8 12	4 45	7 27	8 37	4 50	7 22	8 32
20	T	4 40	7 32	9 8	4 45	7 26	9 5	4 50	7 21	9 1
21	W	4 41	7 31	9 34	4 46	7 26	9 28	4 51	7 21	9 26
22	T	4 42	7 30	9 53	4 47	7 25	9 52	4 52	7 20	9 52
23	F	4 43	7 29	10 13	4 48	7 24	10 14	4 53	7 19	10 15
24	S	4 44	7 28	10 35	4 49	7 23	10 37	4 53	7 18	10 40
25	S	4 45	7 27	11 2	4 50	7 22	11 5	4 54	7 17	11 9
26	M	4 46	7 26	11 33	4 51	7 21	11 38	4 55	7 17	11 44
27	T	4 47	7 25	morn	4 52	7 20	morn	4 56	7 16	morn
28	W	4 48	7 24	0 14	4 52	7 19	0 20	4 56	7 15	0 27
29	T	4 49	7 23	1 4	4 53	7 18	1 11	4 57	7 14	1 17
30	F	4 50	7 22	2 6	4 54	7 18	2 13	4 58	7 14	2 21
31	S	4 51	7 21	3 18	4 55	7 17	3 25	4 59	7 13	3 32

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	3. 0 41 mo.	0 29 mo.	0 17 mo	0 5 mo	11 35 mo.
1st Quar	10. 5 56 mo.	5 41 mo.	5 32 mo	5 20 mo	4 50 mo.
Full M'n	18 9 3 mo.	8 50 mo.	8 19 mo	9 7 mo	7 57 mo.
3d Quart.	25 3 55 ev.	3 43 ev.	3 31 ev.	3 19 ev.	2 49 ev.

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1875.

It would be of great value if we were able, at this season, to forecast the weather for 24 hours. Although in no country in the world is the summer climate more favorable for harvest operations, (and few have so good a one), yet for the want of accurate knowledge of the premonitory symptoms of thunder showers, and other changes of the weather, farmers are often caught with their crops exposed, and suffer damage and loss. The farmer should have as accurate a "weather eye" as a sailor, for he is equally interested in changes of the weather. Except in very rare cases, the admirable weather reports of the Signal Office, can not be made available in time to be of use to the farmer, who must depend upon his own skill and tact in predicting the weather. We have found an aneroid barometer a very sensitive and trustworthy guide, and do not call to mind a single instance in which it failed to give warning of the approach of even a thunder storm some hours before it arrived. The backward motion of the index, is a sufficient notice to use every precaution against getting caught, but not of itself a warning to quit harvesting, for rain does not always follow a barometer falling. One needs only to make things safe as he goes; to cap the shocks, to haul in what is exposed, to hasten cutting grain that is ripe, and protect shocks with hay-caps or top-sheaves. "Forewarned is forearmed," and the warning is all that is needed. Some apparently threatening storms pass over without rain, and in such cases the little labor of preparing for them, is more than compensated by the sense of security one feels in being ready for the worst. There is little probability of higher prices for grain. There is nothing to regret in this. Business recovers slowly from its depression. Labor is everywhere a drug. Laborers generally are in such straits that cheap food is needed for their proper subsistence. The way to improvement seems to lie in fair if not abundant crops, and low prices. The farmer can not thrive while general business is depressed, and business matters are evidently settling down on a basis of low prices. If a calico dress costs only a dollar, those who make the material, must buy their food at proportionately low prices. It is the same with other clothing, shoes, iron, and all those things which enter into general use. The prices of these being now very low, if the prices of food are not proportionately low, some must suffer.

Hints about Work.

Harvest Work.—Field labor can hardly be subject to the same rules as in-door work. The more quickly the crops can be harvested and housed, the safer they will be. Extra hours can scarcely be avoided when the rush of work comes, and reasonable men will not object to it if the work is fairly compensated. In many years of farm work, we have always finished up at 4 o'clock on Saturdays, and never worked on a Sunday, yet never lost a pound of hay or of grain by observing these rules.

Bathing is not only a great preservative of the health, but it greatly promotes comfort. If there is no convenient shed or out-building, where a tub of water can be used for this purpose every evening, arrange a portion of the barn for bathing. Take a washtub with two or three pails of cold water, a large sponge or piece of flannel, and a piece of Castile soap. Dash a few spongefuls of water over the whole body, then wash with soap and water, rinse off, and rub dry with a coarse towel. This is a part of the daily training of the professional athlete, as it hardens the muscles, induces healthful and not debilitating perspiration, and sound restful sleep. Induce the hired men to bathe every night; they will work all the better.

Horses should have every attention that can ease their labors. It is not humane to turn a horse that has worked all day in the reaper, into a poor pasture, to pick his feed during the whole night, or lie and rest with a half filled stomach. (See article on clean stables, on page 280). If horses are turned out at night, they should first be well fed. Wash the legs with carbolic soap suds. Give drink frequently. Fresh cold water from the well, is highly injurious, the water should be as warm as the air, and a handful of finely ground meal, should be stirred in each drink.

Cows will need some succulent feed. The thinnings and suckers from the corn-field will supply this. Let a boy take a wheelbarrow along a few rows, and gather a mess of fodder every afternoon.

Sheep.—The fly which produces the "grub in the head," (*Œstrus ovis*), will trouble the flock. The sheep, when that is present, will run with their heads to the ground, and stamp with the fore feet. Rub some pine tar on their noses, and keep it fresh and sticky. Tar is a good tonic, and helps sheep to resist other parasites. Keep them out of low wet pastures, which produce "rot." Milk the udders of ewes which have lost their lambs. See that the lambs have fresh tender pasture. "Roughness" will not do for lambs.

Hay.—Clover and orchard grass ought to have been cut before this. If not cut, lose no time in doing it; every day's delay greatly reduces the value of the hay. Timothy should not go past full blossom, unless to be left for seed. Red-top may be cut last of all. If there are a few loads of fine manure on hand, they will be of great use upon the freshly mown meadows.

Cutting Grain.—Everything should be fully prepared before harvest is begun. Wheat and rye that is left until dead ripe, may be thrashed as it is cut. It is best to cut before this period is reached. When the grain is firm but still soft, so that it can be pinched in two with the thumb-nail, it is in good order for cutting, and will not shell out. Oats do not ripen evenly, and may be cut when the largest portion of the crop is ripe. Cut as much as possible when the dew is on, to prevent shelling. Cut barley as nearly ripe as may be. The conditions being right, it is safest to cut, bind and shock grain the same day. If a sudden shower comes up, it is soon secured. As binding and shocking must be done, no time is lost in doing it at once.

Cultivating Crops.—Corn and roots must not be neglected. Keep the ground mellow and free from weeds. Nothing helps so much as this to overcome the effects of dry weather. Cultivate no root crops or beans while the soil and plants are wet.

Colorado Potato Beetle.—Give this insect no rest.

Attend to this matter before breakfast every morning, and if Paris Green must be used, sprinkle it while the dew is on the leaves, (see article on this subject last month, on page 226).

Summer Fallows.—As soon as a green tinge appears on a summer-fallow, it needs attention. Go over it with the harrow or the cultivator. The surface should never be allowed to crust or bake over after a rain, for then the benefits of the air and moisture are lost. Growing weeds on a fallow to plow under, in the hope of gaining the green manure, may defeat one great object of the fallow. Some weeds ripen their seed before their blossoming is suspected, and a fresh crop of weeds is thus sown without knowing it. Where a crop of clover has been plowed in, do not disturb it by replowing. Work the soil with the cultivator or a Share's harrow, or horse-hoe, and mix any fine manure with the surface soil. An oat or barley stubble intended for wheat, should be plowed as soon as the crop is off, three or four inches deep, and this surface repeatedly rolled, harrowed, or cultivated, will prevent the under soil from becoming hard, and will act as a mulch. Then plow immediately before drilling the seed, and it will be easier and better than leaving the stubble to bake and harden.

Buckwheat may be sown early this month, and if the soil is good, a seeding of grass and clover, will often make a good catch. Rough pieces of ground may thus be re-seeded economically. One bushel of seed to the acre is ample. The grey buckwheat is the best for flour. The variety known as Indian wheat is only suitable for stock feed, and scarcely fit for that, where better varieties may be grown.

Forage Crops.—Corn may still be planted for fodder. Ruta bagas and yellow Aberdeen turnips, should be sown immediately. White turnips may be left until early next month. Millet or Hungarian grass, may be sown now for a crop of hay. Sorghum thickly sown in drills two feet apart, makes valuable fodder to use green, but it is hard to cure. 200 lbs. of guano or blood manure per acre, will enable late fodder crops to push rapidly.

Work in the Horticultural Departments.

Summer drouths have come earlier this season than usual, and should they long continue, the propsect of good crops will be small. These annual drouths, and the means of modifying them, have been much discussed of late. In hilly countries, where living springs are abundant, water may be easily turned aside, and made to irrigate the crops; in level sections, drive and other wells, from which the water is raised by wind-mills, and various other contrivances, may be used to advantage, and often with profit. In places where it may not pay for a farmer to irrigate his crops, the gardener, with his few acres from which he gets large returns, would find it profitable, especially if there are springs on higher ground than that to be irrigated. However dry it may be, weeds will grow rapidly, and constant care is necessary to keep them down, and the crops in good condition.

Fruit Garden.

Strawberries.—After the plants are through bearing the mulch should be removed, and the soil between the rows stirred, and weeded, and manured; if fine manure is not to be had, apply a good dressing of ground bone or other fertilizer. If new beds are to be set, let enough runners grow to furnish plants, and remove the rest.

Grape Vines.—Tie up the young growth before it becomes too long, and gets broken by the wind; rub off all useless shoots that start. For mildew apply sulphur with a bellows made for that purpose. Hand-pick the beetles and caterpillars which infest the vines. Make layers by burying the shoots in the soil when they become firm and woody, allowing the upper part to remain uncovered.

Raspberries.—As soon as through bearing, cut out the old canes and tie up the new growth. Three or four new canes to a plant are enough.

Currants and Gooseberries usually throw up vigorous shoots from the base of the plants; these, if not needed to take the place of old ones, should be cut out. Use powdered white hellebore for the worm which destroys the leaves.

Blackberries.—The new growth which is to produce fruit next season, should be tied to stakes, and kept in proper shape by pinching. Do not allow the stems to grow over five feet high, and the side shoots should be pinched back when they are 18 inches long. Where plants appear between the rows, dig them out if not needed for new plantings.

Thinning the fruit upon dwarf trees, is especially necessary, as they are liable to over-bear. This should be done soon after the fruit forms, so that the nourishment may be given to the remaining fruit. The quality of pears and peaches especially may be greatly increased by this treatment.

Orchard and Nursery.

But little can be done here beyond what was suggested in the notes given last month. Always refer to the notes of the previous month, as things are hinted at there, which are just as applicable at the present time, and are often more conveniently attended to later in the season.

Marketing.—Crates, boxes, baskets, and barrels, should be provided for sending fruit to market. These should all be marked with the owner's name and address, and the fruit should be assorted and packed, that the dealers may know that it is first-class. All this will pay in the end, both in the increased price and demand, even in years when fruit is abundant.

Pruning may yet be done, and this season is by many regarded as the best for cutting out large limbs, as the wounds heal rapidly.

Budding is usually commenced this month, but the only safe rule is to do the work when good, well-formed buds may be had, and the bark of the stock will lift easily.

Slugs which so disfigure pear and other trees, may be destroyed by dusting with powdered lime.

Insects.—For destroying, or preventing their attacks, see notes under this head for last month.

Grafts often grow so vigorously that there is danger of their being broken by high winds. To prevent this, pinch the more rapid growing shoots.

Kitchen Garden.

Every available spot in the garden should be occupied with something, and succession crops must be planted, if a constant supply of vegetables is wanted for market or family use. Oftentimes two crops may be planted on the same ground to advantage, as lettuce between the rows of cabbages; the lettuce will be off in time to allow the cabbage all the room needed; or horse-radish may be put in among early cabbages, to grow after they are off. If enough manure is supplied for both crops, this is found to be profitable practice.

Beans.—When pole beans reach the top of the poles, they should be pinched. Bush sorts may be planted yet, and produce a good crop. Ground where early beans have been, may be planted with quick-growing crops.

Beets.—Thin those already needing it, and plant early sorts for late use.

Cabbages and Cauliflowers.—Transplant for late crops this month, using only the most vigorous plants. There are many spots around every garden, where a few cabbages can be grown, and all such places should be occupied. If transplanting must be done during dry weather, the roots should be placed in a thin mud for a few minutes, until they are well coated with it; this requires but little time, and often saves many plants. Hoe established plants as often as possible.

Carrots.—Thin out as soon as large enough to handle, and keep the rows clear of weeds until the tops cover the ground and prevent working. Those which throw up a flower-stalk should be pulled out.

Celery need not be planted out before the middle or end of July, and if the plants become well established, then they will grow rapidly when the weather becomes cooler. Market-growers always plant on level ground, and not in trenches, as the first is much the easier way. The dwarf or smaller growing kinds, are best for family use, but the larger growing sell best in most markets.

Corn.—Sow a few rows of the early sorts this month, so as to have some for late picking. As fast as the early sorts are exhausted, the stalks should be cut, and either fed to cattle fresh, or cured for winter fodder.

Cucumbers.—If pickles are needed, plant now in well manured hills 4 feet apart each way. Where pickles are raised for the New York market, they must be sent in green, as it is impossible to sell those put down in salt to the pickle dealers, each company having its own way of salting, which is kept secret. Save the earliest and finest formed for seed; careful selection of seed for a few years will produce a desirable strain.

Egg-plants require a great degree of heat in order to grow rapidly, and if liquid manure is given occasionally, it will be a great help. Place hay or straw around the plants to keep the fruit from contact with the ground.

Endive.—Sow for a late crop of salad now.

Herbs are usually grown on land which has already borne one crop during the season. When a damp day occurs the young plants may be transplanted from the seed-bed to a rich spot prepared for them. Thyme, sweet marjoram, sage, and summer savory are the sorts commonly grown.

Leeks.—Thin out the plants to 5 or 6 inches in the rows, keep clear of weeds, and transplant the thinnings to the same distance.

Lettuce.—Set out plants in a cool shady spot.

Melons.—Cultivate the ground as long as it can be done with safety to the plants; afterwards hand-pull the weeds as they appear above the vines. Remove all fruit not likely to ripen.

Onions when sold green in the market are made into neat bunches with the tops on, and bring a higher price than when loose and cut short. Keep the late crop free from weeds.

Rhubarb.—As soon as fruit becomes plenty, the plants should have a rest. Keep the flower-stalks cut, and give a dressing of manure.

Sweet Potatoes.—Keep free from weeds, and move the vines every week to keep them from rooting.

Turnips.—Thin and weed the late plantings until the tops cover the ground.

Tomatoes.—Tie up to stakes or trellises to keep the fruit from the ground. Cut out the weak shoots and pinch back strong growing ones. Destroy the large green caterpillar or "worm," as it eats both plant and young fruit.

Flower Garden and Lawn.

In order to have a fine garden and lawn, everything must be kept neat and in order, and to do this requires time and care, and to be done well must be a labor of love.

Lawn.—This must be mowed every week if the weather is moist and favorable to growth; during dry seasons once in ten days or a fortnight is enough. Dig or pull out all perennial weeds by the roots, the annual ones can be killed by mowing often enough to prevent seeding.

Bedding Plants will grow luxuriantly at this season, and must be kept clear of weeds. Plants grown for their foliage alone will often show flower-stalks; these should be cut as soon as they appear.

Seeds.—Gather as fast as they ripen, and sow the perennial sorts in shallow boxes placed in a convenient spot for watering and shading during dry times. Label as soon as gathered, otherwise it will be difficult to determine them.

Walks.—Gravel walks and drives require watering and rolling during dry times, in order to keep them hard and smooth. Sifted coal-ashes mixed with coarse sand, with a little loam, make good walks; their use in this manner helps to get rid of the ashes; the coarser portions or cinders make good foundations for walks.

Greenhouse and Window Plants.

It will be quite difficult to keep the greenhouse cool during these hot days, unless a shading of some kind is used. A screen of thin muslin may be arranged upon the outside, or the glass white-washed. Whitewash is the least trouble; the fall rains will remove the greater part of the lime by the time more sun is needed. Sprinkling the walks and floor during the day will materially reduce the temperature. Fumigate the plants with tobacco smoke once or twice a week to kill the "green-fly," and shut up the ventilators once a week and give the plants a thorough showering to destroy the red-spider; this should be done late in the afternoon. Prepare soil and pots for use in the fall, and get everything needed in readiness for the winter. Where much sphagnum moss is used, this or next month is a good time to gather a stock, as the swamps are usually quite dry at this season.

Commercial Matters—Market Prices.

CURRENT WHOLESALE PRICES.

	May 13.	June 12.
PRICE OF GOLD	115 1-2	116 7-8
FLOUR—Super to Extra State	$4 85 @ 6 10	$4 50 @ 5 85
Super to Extra Southern	5 00 @ 8 50	4 60 @ 8 25
Extra Western	5 20 @ 8 50	4 85 @ 8 50
Extra Genesee	5 50 @ 7 25	5 35 @ 7 00
Superfine Western	4 85 @ 5 20	4 50 @ 4 80
RYE FLOUR	4 35 @ 5 50	4 30 @ 5 50
CORN-MEAL	4 00 @ 4 80	3 60 @ 4 50
WHEAT—All kinds of White	1 40 @ 1 47½	1 25 @ 1 35
All kinds of Red and Amber	1 15 @ 1 43	1 09 @ 1 33
CORN—Yellow	89 @ 90	83 @ 86
Mixed	87½@ 92½	78 @ 85
White	89 @ 90	85 @ 90
OATS—Western	75 @ 78½	70 @ 76
State	75 @ 78½	70 @ 76
RYE	1 00 @ 1 09	87 @ 1 00
BARLEY	1 25 @ 1 55	Nominal.
HAY—Bale, ℔ 100 ℔s	60 @ 1 10	60 @ 1 10
STRAW, ℔ 100 ℔s	45 @ 80	50 @ 90
COTTON—Middlings, ℔ ℔	16⅜@ 16½	15⅝@ 16
HOPS—Crop of 1874, ℔ ℔	28 @ 45	25 @ 38
FEATHERS—Live Geese, ℔ ℔	33 @ 60	35 @ 62½
SEED—Clover, ℔ ℔	11½@ 12¼	11 @ 11¾
Timothy, ℔ bushel	2 55 @ 2 75	2 55 @ 2 75
Flax, ℔ bushel	2 00 @ 2 20	1 85 @ 2 00
SUGAR—Refi'g & Grocery ℔ ℔	7¼@ 9½	7¼@ 9⅝
MOLASSES, Cuba, ℔ gal	37 @ 46	30 @ 43
New Orleans, ℔ gal	70 @ 76	68 @ 75
COFFEE—Rio (Gold)	16 @ 19	16 @ 19
TOBACCO, Kentucky, &c., ℔ ℔	10 @ 28	10 @ 28
Seed Leaf, ℔ ℔	7 @ 55	7 @ 55
WOOL—Domestic Fleece, ℔ ℔	28 @ 62½	25 @ 60
Domestic, pulled, ℔ ℔	25 @ 50	25 @ 51
California, clip	15 @ 33	15 @ 35
TALLOW, ℔ ℔	8⅜@ 9½	8⅜@ 8⅞
OIL-CAKE—℔ ton	44 50 @48 50	39 00 @42 50
PORK—Mess, ℔ barrel	21 90 @22 15	19 75 @19 90
Prime Mess, ℔ barrel	19 50 @19 75	— @18 75
BEEF—Plain mess	10 00 @ —	8 50 @10 00
LARD, in tres. & barrels, ℔ ℔	14¼@ 15⅜	13 @ 13⅞
BUTTER—State, ℔ ℔	15 @ 30	15 @ 28
Western, ℔ ℔	12 @ 24	12 @ 24
CHEESE	4 @ 15½	4 @ 12½
BEANS—℔ bushel	1 50 @ 3 10	1 55 @ 3 15
PEAS—Canada, free, ℔ bu	1 19 @ —	1 15 @ —
EGGS—Fresh, ℔ dozen	15½@ 17	18 @ 20
POULTRY—Fowls	16 @ 26	14 @ 25
Turkeys—℔ ℔	17 @ 23	16 @ 19
Geese, ℔ pair	1 00 @ 2 25	1 00 @ 2 75
Ducks, ℔ pair	75 @ 1 00	65 @ 1 00
PIGEONS, ℔ pair	1 00 @ 1 75	50 @ 2 00
PLOVER, ℔ dozen	1 25 @ 1 37	1 00 @ 1 25
SNIPE, per dozen	30 @ 1 37	30 @ 1 25
TURNIPS ℔ bbl	1 75 @ 2 00	2 00 @ 3 25
CABBAGES—℔ bbl	— @ —	1 00 @ 3 50
ONIONS—℔ bbl	50 @ 1 00	50 @ 1 75
ONIONS, new Bermuda, crate	1 00 @ 1 25	75 @ 1 00
POTATOES—℔ bbl	2 00 @ 2 75	1 25 @ 2 00
SWEET POTATOES—℔ bbl	3 00 @ 4 00	2 00 @ 3 50
BROOM-CORN	9 @ 15	8 @ 14½
RHUBARB, per 100 bunches	— @ —	6 75 @ 7 50
LETTUCE, per bbl	— @ —	2 00 @ 7 00
POTATOES, new Bermuda, bbl	7 50 @ —	1 75 @ 3 50
ASPARAGUS, ℔ doz. bunches	2 00 @ 5 00	1 25 @ 2 25
RADISHES, ℔ 100 bunches	1 00 @ —	75 @ 1 00
STRAWBERRIES, ℔ quart	25 @ 40	3 @ 15
APPLES ℔ barrel	1 00 @ 2 50	75 @ 2 25
CRANBERRIES—℔ box	— @ —	1 00 @ 2 00
GREEN PEAS, ℔ bbl	— @ —	3 00 @ 5 00
TOMATOES, ℔ crate	80 @ 1 00	— @ —
SPINACH, ℔ bbl	4 00 @ 4 50	75 @ 1 50
STRING BEANS, per hf. bbl	— @ —	3 50 @ 4 00
CUCUMBERS, per bush. box	— @ —	2 00 @ 6 00

Gold has been up to 117¼, and down to 115⅜, closing June 12th at 116⅞, as against 115½ on May 12th..... With more liberal arrivals, and considerable pressure to realize on receipts promptly, Breadstuffs have been depressed and generally quoted lower, leading to more activity in the dealings, which, in low grade Flour, Spring Wheat, and mixed Western Corn, have been largely on export account. Toward the close, Flour, Wheat, and Corn closed stronger, on less extensive offerings of supplies for prompt and forward delivery. Rye, heavy and irregular. Oats, in less request, and tending downward. Barley, wholly nominal in the absence of stock. Barley Malt wanted at full rates.....Provisions have declined materially, and have been less sought after. The speculative business in Pork and Lard has been on a restricted scale....Cotton has also been quoted cheaper, influenced by the unfavorable Liverpool advices, and the more encouraging crop reports. Demand, fairly active, at the reduced figures, mainly for forward delivery....Wool has been in less request, and quoted weak in price, under the increasing offerings of new clip....Tobacco has been in fair demand, and held with firmness....Hay and Straw, more salable at current quotations.....Hops, lower and dull ...Petroleum and Naval stores, less inquired for at easier prices....Seeds, neglected and almost nominal as to value....Ocean freights decidedly firmer, with Grain, Flour, and Provision room most wanted. Flour by sail and steam to London, 2s. 4½d. per bbl.; Grain by sail, to do., 8¼ @ 8½d. per bushel; Grain by steam to Liverpool, 8½d., and by sail, to do., 7d. per bushel. Grain tonnage for Cork and orders, 6s. @ 6s. 3d.; for Penarth Roads, and orders, 5s. 9d.; for the Continent, 6s. @ 6s. 3d. per quarter.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending June 12th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 d's *this* m'th	267,000	3,315,000	2,604,000	37,000	161,000	916,000
26 d's *last* m'th	264,328	817,000	1,623,000	53,000	239,000	561,000

SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 d's *this* m'th	381,000	4,102,000	2,817,000	61,000	151,000	1,363,000
26 d's *last* m'th	356,000	1,921,000	2,700,000	64,500	138,000	1,814,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 days 1875	267,000	3,315,000	2,104,000	37,000	161,000	716,000
26 days 1874	359,000	5,849,000	1,915,000	167,000	58,000	753,000

SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 days 1875	381,000	4,102,000	2,817,000	61,000	151,000	1,363,000
26 days 1874	237,000	4,107,000	2,312,000	89,000	104,000	1,416,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
June 7, 1875	668,456	1,301,404	27,678	1,163	546,157	267,085
May 11, 1875	969,804	1,542,924	16,724	16,537	545,209	229,655
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,647
Nov. 9, 1874	3,680,141	1,727,540	19,123	117,185	794,722	135,882
June 8, 1875	383,169	116,651	63,188	1,573	323,343	74,669

4. *Exports from New York, Jan. 1 to May 10.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
1875	784,328	6,989,147	5,515,451	97,487	165	51,990	213,582
1874	957,783	15,083,546	7,021,960	443,193	100	57,585	236,916
1873	526,562	3,241,919	5,398,449	20,823	16,526	18,646	38,200
1872	363,380	3,242,961	6,966,769	252,624	22,658	15,178	—
1871	874,090	6,153,722	3,200,632	34,919	88,818	14,889	—
1870	727,097	5,435,382	130,519	36,595	—	9,378	—
1869	420,294	3,802,539	1,328,869	—	—	40,101	—
1868	403,556	2,580,805	3,559,097	158,093	—	39,008	—

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
May 17	6,052	73	3,963	16,901	30,133	57,122
May 24	8,426	59	4,650	14,821	29,453	57,429
May 31	8,031	54	5,057	17,105	25,238	55,785
June 7	9,370	120	4,441	23,422	26,856	64,809
June 14	8,817	73	4,205	20,289	26,918	60,302
Total for 5 Weeks	41,296	379	22,336	97,838	138,598	295,447
do. *for prev. 4 Weeks*	36,943	423	12,003	75,835	124,523	249,762
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	8,259	76	4,467	18,567	27,749	
do. do. *last Month*	9,237	106	3,002	18,964	31,132	
do. do. *prev's Month*	8,040	127	1,159	18,142	23,950	

Beeves.—The past month has been a good time for sellers. Opening with light receipts, the market was advanced ¼c. on extra, and ½c. on the average, and although the advance was resisted by buyers, who held off the next week and gained an advantage of ½c., this was soon lost, and with a strong market the largest receipts for some time were moved off at a gain of ½c., which was held. In the West the same active feeling was experienced as here, and the Live-Stock Reporter became jubilant over the improved demand and higher prices. One year ago No. 1 spring wheat was 30c. a bushel higher than now, and the average of the stock market then was ¾c. per lb. lower than it is to-day. Graziers have thus the better of of the grain grower just now. As we close the market is active and firm, with sales of extra beeves at 13¾ @ 14c., to dress 58 ℔s.; good native steers at 11 @ 13½c., to dress 56 to 58 ℔s. Texans brought 7½ @ 11½c., on 54 to 56 ℔s., and stockers, to dress 55 ℔s., sold for 9c. per ℔.

The prices for the past five weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
May 17	9 @13½c.	11 @12 c.	11½c.
May 24	9 @13½c.	11½@11¾c.	11½c.
May 31	9 @13½c.	11½@12 c.	11¾c.
June 7	8½@14 c.	11¾@12½c.	12 c.
June 14	7½@14 c.	11¾@12¼c.	12 c.

Milch Cows.—The demand for cows has been light all through the month. Prices have been fair at from $50 to $80 on the average. One fine cow and calf brought $95. With a dull market, prices are steady with an average of $55 to $70 for fair to choice, extra cows bring $90, calf included....**Calves.**—A fair business has been done in veals at uneven prices. The market has fallen off ½c. one week to gain it back the next. At the close of our report prime veals were selling for 7c. @ 8c. ℔ ℔, and buttermilk calves at 5c. @ 6c. ℔ ℔....**Sheep.**—The market for sheep and lambs has been unsteady. Opening at the commencement of our report, strong with an advance of ½c. ℔ ℔, it became weak and lower, and closes dull with prices for unshorn sheep 6¼c. @ 6¾c., and for clipped 5½c. @ 6c. ℔ ℔. Lambs sold for 9c. @ 10c. for Kentucky, and 9½c. for Virginia weighing 40 to 50 ℔. per head. Jersey lambs 55 ℔. per head brought 13c. per lb.....**Swine.**—Hogs have been dull, but steady during the past month. No live hogs have been offered, and as we close, city dressed sell for 9½c. @ 9¾c. per ℔.

ALL ABOARD!

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ N.B.—The New Postage Law.—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

"Science Applied to Farming," on page 254, gives some useful and important hints on the value of several kinds of feed.

Our "National BAZAAR" this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look *all through* the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thoughts in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

Fruit and Produce, may be consigned for sale to Messrs. Meyers & Alley, 83 Murray Street, with confidence in having them quickly and well sold, and honest returns made at a reasonable commission.

A Summer Resort, Quiet, Home-like, Healthful, with charming surroundings in the neighborhood, and at reasonable rates, can be found by addressing "Maplewood," Ellenville, Ulster Co., N. Y., or inquiring at No. 2 Exchange Place, (Room 6,) N. Y. City, between 9 A. M. and 3 P. M.

Potato Bug—Paris Green.—F. W. Devoe & Co., 115 & 117 Fulton St., N. Y., issue a circular giving an article from the Report of the Mich. Board of Agriculture, by our friend Prof. A. J. Cook, on the use of Paris Green. Devoe & Co. claim that they make only pure Paris Green. There is a plenty of the adulterated article to be had.

American Veterinary College.—This college, recently incorporated, is under the direction of the former Faculty and Medical officers of the New York College of Veterinary Surgeons. Prof. A. Liautard is Dean of the faculty, and Dr. A. Large is the professor of veterinary practice. Under the direction of experienced professors this college offers a good opportunity for students who desire a veterinary education. The session commences in October. The fees are $135. Circulars may be obtained of Dr. A. Liautard, at the college, 141 West 54th st., New York.

Professor Turned Farmer.—Professor N. entered our office the other day. He was dressed in a suit of black, not of the newest fashion, but highly respectable, with white cravat, polished boots, and withal smoothly shaved. We had known him for a score of years, first as a professor in a Biblical Institute, then as a writer in church periodicals, and lastly as United States Consul at one of the inland cities of Germany. But his consulate ceased and he returned to his native country. We presumed, of course, that he had resumed his old occupation of teaching, or that he had settled down as a writer, for which he possesses rare qualties, when in course of conversation he announced himself a farmer. Had actually exchanged the professor's chair for the plow, and dropped his pen for the hoe. Our astonishment was freely expressed. We said to him, "Why, Professor, some people say that a man cannot live by farming, even if raised to the business, how then do you expect to succeed, who are without experience?"—"Oh," he replied, "men cannot live if they depend on others to do their work, but it hasn't cost me over seven dollars all this spring. I have done my own plowing, planting, and chores, and as I must starve unless I work, I conclude to work so as not to starve."—Our friend looks healthy, cheerful, and *gritty.* Perhaps here is a lesson for seedy merchants and bankers who are troubled beyond measure for simple support in these hard times. Let them go to mother earth with Queen Esther's resolution, "If I perish, I perish." C. C. N.

Buffalo Gnat.—A brief account of this mischievous insect, is given on page 262, in which, by the dropping of a single letter, the scientific name of the insect is spelled incorrectly. It should be *simulium,* and not *simulum,* as it stands there.

Produce Commission—Removal.—The old house of W. A. Covert & Co., has taken up new quarters at 112 Warren St., N. Y.

Death of George S. Parsons.—Mr. Parsons was well known to those dealers in and purchasers of agricultural implements, as he was for many years with R. H. Allen & Co., and more recently with Carr & Hobson, of New York. He died on June 1st, of Brights disease, and though only 28 years of age, was a well known and popular member of the trade.

Guano.—"M." Jersey City. Plants with delicate foliage will be very apt to be injured, if guano is dusted upon their leaves.

☞ **Don't fail to read about the**

Wonderful Menagerie,

On Page 283.

The Colorado Potato Beetle has put in its appearance, and has now reached salt water. Some of the potato growing counties of New Jersey are badly infested, and they are equally numerous in Pennsylvania, and southward. Last fall we gave warning that they were near the coast, and have this year given timely notice. Knowing that they were to be expected, the writer began to examine his potatoes as soon as they were fairly up, and in the last week in May a few bugs were found. Examination was daily made of the vines, and a few hundred in all collected, and what few eggs were found destroyed. If the first ones which come from their winter quarters in the ground, are allowed to breed, then the case becomes serious, but having, while the plants were small, and the beetles easily seen, disposed of the first brood, we hope to keep them in check, though no doubt some will come in from other places, and it will not do to omit frequent examination. Those who have been so unfortunate as to allow the insects to get the mastery, must resort at once to Paris Green. Full particulars as to its application, are given in June, page 226. Every day of delay only makes the matter worse. If the bugs are few, pick by hand, and destroy the eggs, which will be found in little orange-colored clusters on the leaves. If too many to pick, then use Paris Green, observing *all the precautions* given in the article referred to. Keep up the watch; if no bugs are found now, they are liable to come at any time during the summer, and success depends greatly on beginning in time.

The Peach Crop.—The peach trees in Delaware and Maryland, were, as usual, all badly injured by the severe winter. Again in spring, that frost came and killed all the buds, as it is bound to do every year. Very likely the convenient peach bug will be along at the proper time, it came last year and was very destructive—in the newspapers at least. On the other hand, we have it from the best sources, that up to the middle of June the prospects were that the crop will be the greatest ever known in the great peach counties of Del. and Md.

Agricultural College.—"A Correspondent," who gives no clue to his whereabouts, not even his state, dates his letter May 31st, and asks us to reply in June. We don't know who this youth is, or where he lives, but he needs many things more than he does an Agricultural College. He should learn to spell, and should know that every third word does not begin with a capital letter. Asking if students "are Learned to plow Good," shows that he has not done with the common school. He should learn that it is impolite to write to any one without giving his name, and that it is customary to give town and state. Take our advice, young man, and get a decent common-school education before you think of anything beyond.

SUNDRY HUMBUGS.—The letters we receive thanking us for giving warning against certain schemes, and thus saving the writers from fraud, are so numerous that we are sure that these exposures have been of great benefit to our readers. But this is only one side of the matter, certain other letters make us feel that there is a class of persons which, do what we may, we cannot help, and their letters are quite as discouraging as the others are the reverse. It seems very strange when we have exposed a scheme month after month, and warned our readers against it in the plainest language, to receive a letter taking up the subject afresh and asking the very queries we have already answered. Then again, if there is anything that we have tried to state clearly, and enforce by repetition, it is the fact that we regard all advertising doctors as useless or dangerous, and have stated that we make no exceptions to this—yet more of the time of one man than we can spare is taken up in answering letters from all over the country, asking if we know anything about this or that advertising doctor, or if such a one is not an exception to the general rule. These inquiries come so often that we sometimes wonder if these people read what is written. While we are willing to aid our readers with advice upon schemes not already treated of in this column, we beg of them not to ask about matters already disposed of. We have no information held back, and cannot add to what has been said, and it is too great a tax upon our time to repeat in a private letter what has already been published for the general good. We are led to these remarks by several letters now before us which the writers need not have written had they looked over the humbug articles for the past few months. Some of these letters are inquiries

ABOUT WALL-STREET BROKERS,

and we have already given abundant warning in this matter. As bad a name as the street has, there are men in it of the highest integrity who advertise their legitimate business, so we cannot say that all Wall-street brokers are frauds. But where you find those calling themselves brokers, advertising in obscure country papers, setting forth the hope of immediate great returns for small investments, you may be very sure that such are of the kind known as "curbstone brokers," who have no standing at the regular board, but belong to that class of "shysters" who give the street its bad name. It is safe to say, in every case and all the time, one who is not familiar with stock operations should have nothing to do with the street either personally or by proxy. "Never play at a game you do not understand."

HEAVY LOSSES IN EVERY COMMUNITY

annually result from small frauds which the people acquiesce in if they do not encourage; the small losses in each family every year are in the aggregate very large. Some storekeepers designedly cheat, while many others are careless, and those who buy their supplies at retail, not only pay a larger price for a given weight or measure, but they often do not get the weight they pay for. In cities weights and measures are, or should be, annually examined and sealed; this, while it prevents much unintentional false dealing, does but little to avoid actual fraud; but in the country the buyer has not even this protection. Those who have never given attention to the matter would be astonished to find how few scales, weights, and measures are really accurate. Every family should have correct scales and weights, and re-weigh each article in the package as it is brought home, if found short-weight, return it immediately, even at the cost of some trouble, and ask that it be made right. As soon as it is understood that you intend to have what you pay for, there will be little trouble in future. Some may say that

"IT LOOKS SO SMALL AND MEAN

to make a fuss about an ounce of coffee or a quarter of a pound of sugar." It is not mean, but just. For example, you agree to pay 35c. for a pound of coffee, and law and custom decide that you are entitled to 16 avoirdupois ounces. If you get but 15 ounces, it is your duty to show the dealer, if he is honest, that his scales are inaccurate, and that he is unconsciously defrauding his customers; if the short weight is intentional, the dealer should be exposed. Let any one who thinks it mean to insist on full weight, try the other side of the case and give 32c. instead of 35c., the agreed price of the coffee, and see if the seller will think it "mean" to ask for the other three cents. Not only in articles that are sold by weight

and measure, but in various put-up articles is there great fraud. So bad has this matter of short weights become in articles put up in cans, such as tomatoes, fruits, etc., that the dealers have had a meeting to agree upon uniformity in packages. Three pound cans of tomatoes seldom weigh more than two and a half pounds, and unless carefully examined, the difference between the two is not noticed. Purchasers are partly to blame for this, as they buy what seems to be the cheapest without weighing. The whole business of retailing is full of small frauds, which all honest dealers will be glad to abolish, but the reform must begin with the purchasers, who should insist in getting just what they pay for, and if makers or putters-up of any articles in cans, bottles, or parcels give short weight, don't buy their goods....A friend sends us a lot of advertisements cut from a paper in Ohio and asks: "How can

A RESPECTABLE PAPER

print such things?"—We really do not know, and advise our inquiring friend to ask the paper that does it. Still what can be expected of an ordinary secular paper when the Independent, which professes to be a religious journal, not only admits quackery into its columns, but writes editorials in defence of it.

MEDICAL MATTERS

seem to be very quiet. A postmaster in Kentucky sends us the circular of one Dr. Van Meter, and asks us what we think about it. We think it about as fine a specimen of vanity and quackery as we have lately seen. He has a map showing his route of travel, a certificate of good character from certain "elders," he promises great things and will no doubt carry off from the places down upon his map more money in the one or two days he will stop at them, than the well educated, thoroughly competent physicians at those places, who are too modest and have too much respect for their profession to resort to such means, can make in a year. Whenever a "Doctor" enumerates what diseases he can cure, he shows the shallowness of his acquirements. . Travelling quack doctors have long been known, and probably the world will be afflicted by them for a long time to come. We have seen one of these chaps come into a place where there was an abundance of worthy physicians, and by his flourish of hand-bills, and great pretentions attract the most wealthy people in the town to the hotel where he remained a few days, and depart with hundreds of dollars. These same wealthy people being ready to run after the next quack who comes along.

FRAUDS IN LIVE-STOCK.

There have come to us so many complaints of the doings of some live-stock dealers in Chester Co., Pa., that we are very sure that they cannot be accidental, and have no doubt that actual fraud has been practiced, indeed one of our contemporaries has published the firm by name as swindlers. "W. W. B." asks if in this denunciation we refer to Potts Brothers, of Parkersburg, Pa., who are dealers in stock. Certainly not. We have never had any complaints of the manner in which Messrs. Potts Brothers conduct their business, and should be very sorry if our remarks should be construed to their injury, as we have reason to believe they are quite different people from those referred to. We have heard, what we hope may be true, that the fraudulent chaps have run the length of their rope and gone out of the business.

SENDERS OF CIRCULARS

must make some funny mistakes; we happen to know of a case in which one of the most thoroughly confirmed and inveterate of old bachelors received by mail a prospectus of somebody's "Marriage Guide," which "points out the perils that beset the inexperienced youth," etc. ....We learn that many postmasters engage in distributing circulars of various quacks as well as of lottery and other swindling schemes. Such should be aware that the present Postmaster General is a man who tolerates no nonsense, and should a complaint be made that a postmaster engages in any such work as this, such postmaster would very soon find himself without any post-office. We advise our many friends among the postmasters not to allow their good nature to let them do any work of this kind. Mr. Jewell means business, as a postmaster in Wyoming Territory found out to his sorrow; the postmaster was in the pay of a lottery concern, and a special agent of the department put a stop to his career....A concern in St. Louis, Mo., sends out a most rascally circular to young men, the whole object of which is to work upon their fears, and as a matter of course make them think that their only safety consists in getting some of the nostrums offered in the circular. It would offend many good people if we were to speak as plainly as we would like in warning not only young men, but old ones, and women too, against the pernicious forms of quackery which have reference to sexual matters. If young people of both sexes could know that at a certain age new functions were developed, and that some things which take place in relation to these are perfectly in the order of nature, and not indications of anything wrong, they would be saved much anxiety and unhappiness. Mothers usually inform their daughters on such matters, but the boys are mostly left to pick up such knowledge as they can. If a boy just developing into manhood comes across one of these quack circulars, he finds there the first information he has had on such things. But unfortunately these quacks describe symptoms and occurrences which may be perfectly natural, and not of necessity important, as something dangerous and alarming. The boy sees his own case described exactly, and is told that these things point to most unhappy results. After the youth's fears are excited, and he sees himself in imagination going to a premature grave as a wreck from debility, he finds to his great comfort the assurance that a certain "Restorer," "Invigorator," or other nostrum will bring him sure relief, and he ends by writing a letter describing his troubles, and gives to some distant quack that confidence for which he unhappily can find no recipient at home. Fortunate is it if this correspondence leads only to the clandestine procuring and furtive taking of some simple tonic under a high-sounding name. Some of these quacks do not let their victims off so readily. There is a set of fiends who, if they can get the name of and any clue to a young man who has, or thinks he has, any trouble that he would not like to have known, set a price upon their silence and threaten, unless their victim pays a certain sum weekly, to expose him to his parents as under treatment for a disease he never thought of Let every young man avoid all such correspondence. The mental effect of different diseases is very peculiar; one very ill with an affection of the lungs is cheerful and hopeful, and makes light of the most severe ailments, while one with any trouble, however light, of the sexual organs, is timid, apprehensive, and always magnifying the merest trifle into something of dangerous import. These quacks are well aware of the ease with which they can excite the fears of all, but especially of the young and uninformed, and when a boy old enough to know that there are different sexes, gets hold of one of these villainous circulars, the chances are that his peace of mind will be seriously impaired. Boys who read this, take a bit of advice! If one of these circulars falls in your way, don't read it. If you see a book on health advertised to be sent free, don't send for it, indeed don't bother with any medical books whatever. But if you feel worried about some things which you do not understand, go and have a free talk with the physician of your family, if there is no one at home you had rather confide in.

Early Beatrice Peach.—J. McGregore. This peach has now been largely planted, and it is likely that the present season will allow a decision to be made as to its value. The trials in a few localities, when first introduced, were so promising, that a number of large peach growers, who plant solely for profit, set it in large quantities, and this year will be their first full crop.

"What's in a Name?"—We have on a former occasion noted some of the remarkable words the English have introduced into the nomenclature of horticulture; those applied to things, but now they are trying their hand at persons. We thought the extreme had been reached, when one English florist announced himself as "*bouquetist* to Her Majesty," but Pooley & Co. go ahead of this, for they claim to be "Horticultural *Sundriesmen*"—but, Pooley & Co., why don't you follow precedent and preserve the unities, by saying "*sundriesists*"!

Summer-Fallowing for Wheat.—Elder Bros., Darlington, Beaver Co., Penn., write: "The wheat crop looks badly in this county. We think we were fortunate in not sowing oats last spring on our corn stubble, but plowing it in June, and keeping it well cultivated and sowing it with wheat the last days of August. This wheat look well.

Grade Cotswold Merino Sheep.—Elder Brothers, of Penn., write: "Our grade Cotswolds are doing well. We have a flock of 80 yearlings, that will average over 100 lbs. each. We sold 100 lambs last year, at 12 weeks old, averaging 52 lbs. each. Was not that good?"—It is a remarkably good average, but the lambs from these 80 yearling ewes, if bred to a pure Cotswold this fall, will give a still higher average. At least this is our experience.

Sowing Wheat after and before Rain.—"We sowed a field of wheat," writes a correspondent, in Penn, "on the 26th and 28th of last September, the ground being very dry. On the 26th we were driven out of the field by heavy rain. Finished sowing on the 28th. What we sowed after the rain, up to the very drill track, is *better* than what was sown before. What is the reason?"—Perhaps the drill deposited the seed deeper, and covered it better in the moist earth after the rain. Or it may be that the rain only wet the surface soil half an inch or so deep, and the wheat was in dry soil below, but in drilling after the rain, the moist earth disturbed by the drill coulters, fell into the drill row with the seed, and caused it to germinate quickly. Wheat loves a compact soil. It may be that the seed sown after the rain, was brought in closer contact with the soil—that the moist earth adhered more closely to the kernels, or that the drill coulters pressed the moist earth, and made a firmer bed for the seed and young plants.

Grasses for the South.—"Ranger." Orchard Grass, (*Dactylis glomerata*), has been found to succeed very well in the southern states as a hay grass, but it must not be pastured after it has been mown. It should be cut while in its early blossom, or the hay will be inferior in quality. For winter pasture, Kentucky Blue-grass, (*Poa pratensis*), has been found the most desirable, but to have a good bite during winter, it should not be pastured in the summer. We know of no grass that will stand pasturing the year round in the south without irrigation.

Bremen and China Geese.—"R. J. F. W.," Loudoun Co., Va. The Bremen geese are white and large bodied. China geese are very readily distinguished by their long necks, dark gray bodies, the dark stripe down their necks, the bunch on the base of the bill, which is most prominent in the gander, and the very coarse noise which they make.

Information about Patents.—"O. P. W.," Henderson Co., Tenn. We can not give the information desired. It will be the least trouble, when information about the dates of the issue of patents is desired, to write direct to the Commissioner of Patents, Washington, D. C.

Fish Scrap in Ohio.—"J. F.," Brooklyn, Ohio. Farmers near the sea-coast have learned the value of fish scrap, and it is eagerly purchased by them for $25 and over per ton. It would be well for those near the shores of the great lakes where fish are taken in large quantities, and where scrap can be procured for nothing, to know that it possesses most of the properties of guano, although in a less concentrated form, and may be used in the same manner and for the same purposes as guano. By composting the fresh scrap with five times its quantity of stable manure or swamp muck, a most valuable fertilizer may be made, of which two tons would be about equal to 300 lbs. of guano.

Cubic Feet of Hay in a Ton.—"E. M.," Chalybes, Conn. It has been stated several times in the *Agriculturist*, that 500 cubic feet of ordinary timothy and clover hay, packed in a mow under ordinary circumstances, and settled down for three or four months, will make a ton of 2,000 lbs. A mow of such hay, cut when the timothy was in blossom, and with not more than one-third of clover in it, that had remained in a mow 30 feet long, 16 feet wide, 16 feet high, for nine months, when weighed out for sale, was found by us to be a little less than 15 tons. We have baled and weighed several mows and stacks of such hay, with the same result. Clear clover hay is much lighter, and requires nearly 700 cubic feet for a ton. Red-top hay is still lighter than clover, and timothy cut ripe, is heavier than when cut in blossom. We know of no authoritative statement in any publication as to this matter, but we believe our estimate will agree with that of most persons who have had experience in packing hay. We should be glad to hear from those of our readers who have measured and weighed hay of different kinds, as to the bulk of a ton.

Oregon.—Those interested will find a very good new Map, etc., of this state, advertised by Messrs. Gill & Co. This is in the future to be one of the grand states of the Union on the Pacific Coast.

Construction of Mill Dams, by Jas. Leffel & Co., Springfield, Ohio, is a work that will be found very useful to millers and manufacturers, who own water-powers. The principles upon which dams should be constructed, are explained and illustrated by descriptions and engravings of dams now existing in various parts of the country. The authors and publishers are the makers of the well known Leffel turbine wheels, and understand what they write about.

Value of Skimmed Milk.—"H. B. G.," For feed for pigs we should judge skimmed milk to be worth not more than two cents a gallon. We should be glad to have a record of the feeding of a pig upon skimmed milk and meal, with the quantities of each used, and the gain in weight made in 100 days, by a few of our readers, to compare with records of our own.

Sawing Machine.—We have received a letter from a party in Oregon, with a drawing of a sawing machine somewhat similar to that illustrated in the *Agriculturist* of May last, and which was patented in 1872. The party wishes us to notify our readers that to make the machine we described, would give him a claim to a royalty for his patent-right. On the other hand, we wish to say that the machine we described, is an exact drawing of one that was used by the writer of the article describing it, in 1864, and that the method of the swinging shelf, which is one of the novelties claimed in the patent, has been in use for sawing slabs, in the Michigan and Wisconsin saw-mills for many years. This patent therefore confers no right to prevent any person from using the machine described in the May *Agriculturist*.

Patent-rights.—"J. K.," York Co., Penn. It will be quite safe to refuse to pay any claim for any patent-right on an ancient triangular harrow, a slide gate, or any old fashioned churn, until you are satisfied that the claim is just. When any claimant for patent-right appears, whose demand is doubtful, it would be wise for a few neighbors, or the members of a farmer's club, to join in the expense of investigating his claim. United in a farmer's club or association, farmers are strong; alone they are weak, and are often made victims of these patent humbugs. In speaking in this manner, we do not intend to encourage any infringement upon the rights of a holder of a valid patent. Such men are likely to be willing to show the justice of their claims, and to court rather than shun investigation. No trouble need be apprehended from such. There is, however, a class of swindlers, who go about the country pretending to hold patents, who, by threats, extort money from farmers, and the antics of these should be stopped.

Basket Items continued on page 277.

Books Noticed.

Progressive American Architecture, by G. B. Croff.—This new and important work embraces elevations and plans of dwellings of various styles, store fronts, school, bank, and church buildings, offices, arbors, cupolas, cemetery vaults in stone, stables, etc. It gives full exterior and interior details of wainscoting, newels, balusters, and rails, mantels, book cases, fancy cases, counters and shelving for stores, with numerous other useful illustrations, the whole in 97 elaborate plates, making it one of the most valuable works of its kind ever issued. Orange Judd Co., Publishers. Price $10 by mail.

Chemistry of the Farm and Sea, by Dr. J. R. Nichols.—This is a series of familiar talks upon matters of every-day life, which every intelligent person should know, but which, in our system of education, are generally neglected. Orange Judd Co. Price, $1.25.

Soiling of Cattle, by Josiah Quincy.—This work was the first to popularize the important matter of soiling, and though written some years ago, it has maintained its place as the standard work upon the subject. Recently re-issued by the Orange Judd Co. Price, $1.25.

Geyelin's Poultry.—This is the only work which gives any detailed account of keeping poultry on a large scale. Being a translation from the French, all its practices will not be suited to this country, but it contains many useful suggestions which may be profitably adopted here. Orange Judd Co. Price, $1.25.

Rural Affairs. Vol. VII. J. J. Thomas, Editor. Luther Tucker & Son, Albany. This, like the preceding volumes, is made up of the matter contained in Thomas' admirable "Annual Register" for three years. It would be difficult to find anywhere in the same space so great a variety of useful information upon all rural subjects, from laying out a flower garden to building a piggery. Sold by the Orange Judd Company. Price, $1.50 by post.

Fungi, their Nature and Uses, by M. C. Cooke. Edited by the Rev. J. M. Berkely.—This is one of the highly valuable "International Scientific Series," published by D. Appleton & Co., and bears the names of two of the most eminent British Fungologists. It is as popular as a work upon this subject can be made, but in treating of objects so unlike all other plants, as are fungi, new names must be introduced in describing new parts, and any work of this kind must be somewhat technical. This work will prove of great use to those who would know something of the structure of these strange plants, and is a welcome addition to our literature. Price, $1.50.

Trow's City Directory.—This portly volume, which is of little interest to those outside of New York, is of the greatest utility to all who live in or visit the city. The present volume is a wonder of industry and completeness.

Whip and Spur.—Under this title the various war reminiscences of Col. Geo. E. Waring, Jr., which originally appeared in the "Atlantic Monthly," are here collected, and with the addition of some kindred articles form the neatest little volume imaginable. Every lover of the horse who has read "Vix" and "Ruby" will want to read them again in this beautiful form, and those who have not read them have a treat in store. Jas. H. Osgood & Co., Boston. Price $1.25.

Manual of the Cultivation of Grasses and Forage Plants at the South, by C. W. Howard, Kingston, Ga. Many persons assert that grasses cannot be grown at all in the southern states. That they can be grown there, except upon naturally poor or exhausted land, this pamphlet shows and tells how it is done. Every southern farmer should have it.

Lightning Rods, How to Construct Them, by John Phin, C. E.—This little work tells all that is necessary to be known about lightning rods, and by following its directions, any intelligent mechanic or other person can make a perfect lightning protector at much less expense than any of the patented ones, many of which are worse than useless. Sold by Orange Judd Co. Price 50 cents.

Books.—Mere Mention.

The following books are, many of them, of sufficient importance to have more extended notice hereafter. All we can do now, is to acknowledge their receipt.

U. S. Official Postal Guide. Boston, H. O. Houghton & Co. 50 cents.

Agriculture in South Australia, a reprint from the Melbourne *Leader*.

Knight's American Mechanical Dictionary, 3 vols. New York, J. B. Ford & Co.

Milk Analysis, by J. Alfred Wanklyn. N. Y., D. Van Nostrand.

How to Use the Microscope, by John Phin. N. Y. Industrial Publication Co. 75 cts.

Manual of Jurisprudence and Co-operation of the Patrons of Husbandry, by A. B. Smedley, DesMoines, Iowa. Geo. W. Jones. $1.25.

Sex in Industry, Azel Ames, Jr. M.D. Boston, Jas. R. Osgood & Co.

Illustrated Homes. Describing Real Homes and Real People. By E. C. Gardner. The same. Price $2.

Diseases of the Horse, by Robert Chawner. Philadelphia, Porter & Coates.

The Chemistry of Light and Photography, by Dr. Hermann Vogel. N. Y., D. Appleton & Co.

Semi-Tropical California, by Maj. Ben. C. Truman. San Francisco, A. L. Bancroft & Co.

Reports, etc., Received.

Transactions of the Mass. Hort. Society, for 1875, Part I. This is altogether too excellent a Report to be disposed of with a mere acknowledgment, and we hope to say more about it.

The Philosophy of Dairy Manufactures, by Hon. X. A. Willard, and Physiological Considerations Concerning Feeding for Butter and Cheese, by E. Lewis Sturtevant, M. D. Both these papers are from the forthcoming Report of the Secretary of the Conn. Board of Agriculture, and whatever else the Report may contain, these memoirs, by gentlemen so thoroughly competent to handle their subjects, will stamp it as one of exceptional value.

The Rhode Island Society.—(In other words, T. R. I. S. F. T. E. O. D. I.) has published its transactions for 1874, and includes an account of the New England Fair held at Providence last year.

The Germantown, (Pa.), Hort. Society publishes its prospectus for the year in a form of exquisite neatness. Though very young, the society appears to be remarkably strong.

Proceedings of the Florida Fruit-growers' Association held at Palatka, Nov. 1874, and full of interest to all southerners.

Agricultural Education, an address by Prof. T. C. Abbott, Prest. of the Mich. Agricultural College.

Massachusetts Agricultural College, Amherst, Mass., 12th Annual Report.

Bulletin of the Bussey Institution.—This Institution, the Agricultural Department of Harvard University, bids fair to take in this country a place similar to that held by Rothamstead, in England. Besides other papers, this contains the Report of Prof. Sargent, director of the Arnold Arboretum. Reports on the trials of fertilizers by Prof. Storer. The valuable paper on Potato Rot, noticed elsewhere. Analysis of Salt-marsh and Bog-hay, and on the Fodder Value of Apples, both by Prof. Storer, together forming a valuable addition to our literature.

Catalogues of Various Kinds.

Now that the Nursery, Seed, and Flower catalogues have nearly ceased to come, the implement makers of various kinds, and dealers in other articles, present us with their favors.

SEEDS & PLANTS.

Anderson, Hall & Co., Sydney, New South Wales, Australia. A magnificent catalogue which would be a credit to any firm in any part of the world. A notable feature is the seeds of Australian timber trees and native shrubs. When we read over the list of hardy trees and shrubs, "suitable for out-door planting in the neighborhood of Sydney," we almost wish that our lot had fallen where such treasures can be grown.

William Rollisson & Sons, Tooting, London, S. W. England. This catalogue, which came some months ago, was mislaid at the time others were noticed, which we regret, as it is one of the very best issued. We shall be glad if we can make amends for the over-sight, by calling special attention to it, as remarkable for the extent of the collection of Stove, Greenhouse, Hardy, and Bedding-plants it contains, for botanical accuracy, and the fullness of its information as to new plants—a capital catalogue.

FARM MACHINES, IMPLEMENTS, and APPLIANCES.

Deere & Company, Moline, Ill., send several very neat catalogues of their manufactures, among which plows and cultivators are prominent. They make several peculiarly western forms, and some of their Breaking-up Plows look wonderfully efficient; they make also Sulky Plows and Cultivators, which do away with "following the plow," altogether.

W. H. Banks & Co., Chicago, Ill., have a catalogue of "Labor-saving machinery," to look over which is about equal to going to an agricultural fair. Everything from a Post-auger to a Hay-Press.

The Bradley Manufacturing Co., Syracuse, N. Y., have their own specialties, including Harvesters, Mowers, and Hay-rakes, down to garden cultivators, and up to Steam Hammers.

The Furst & Bradley Manufacturing Co., Chicago, Ill., offer still another set of implements, including Gang-plows, Cultivators for walking or riding, and pretty much everything else in the line.

The Blymyer Manufacturing Co., Cincinnati, O. This old concern, which has long been the leading house in Sugar and Sorgo machinery, makes in addition Steam-engines for the farm, Thrashers, Cutters, Sawing-machines, and other farm implements.

Schenck, Sheridan & Moffatt, Chicago, Ill., send an illustrated catalogue of their Torsion Wagon Springs, figured in the *Agriculturist* some months ago, but given more in detail here. Messrs. Schenck & Sheridan are general agents at Fulton, N. Y.

Semple, Berge & Co., St. Louis, Mo., issue a large 8vo. catalogue of 169 pages, showing an immense stock of farming tools, with numerous specialties, prominent among which is the Whitewater Wagon.

WIND-MILLS & WIND-ENGINES.

Eclipse Wind-mill Co., Beloit, Wis. An illustrated catalogue, giving details for pumping water, grinding grain, etc.

C. T. Edwards, Moline, Ill., manufactures the Moline Wind-mill, and gives figures of every part of the same.

The U. S. Wind-Engine and Pump Co., Batavia, Ill., make the Halladay Wind-mill, Pumps, etc. This catalogue would astonish an eastern farmer with the array of names of persons who have this particular wind-mill in use. It gives full directions for building a supply tank, and the names of over 100 Railroads that use the power.

INDUSTRIAL EXHIBITIONS.

Cincinnati Industrial Exposition, will open on Sept. 8th, and continue until Oct. 9th. For the very full premium list and rules, send to Frank Millward, Sec'y.

American Institute, New York, will open its 44th Annual Exhibition, on Sept. 8th. Application for space should be made at once to the Board of Managers.

Inter-State Exposition of Arts and Industries, Chicago, Ill., begins Sept. 8th, and continues four weeks.

MISCELLANEOUS.

Trotting Stock. Jacob Strader, Brook Fields Farm, Hebron, Boone Co., Ky. Giving full pedigrees of a fine lot of horses and mares.

Fruit Plates. D. M Dewey, Rochester, N. Y., has a classified list of plates of fruits, ornamental shrubs and trees.

A. M. Lesley, New York. Zero and other Refrigerators and coolers of various kinds.

Adorn Your Homes

AT A

Nominal Cost.

We have some Splendid Pictures Printed in 18 Oil Colors, Beautiful and Charming.

(The first three [as named below], mounted on heavy Card-Board, ready for framing, or for use without a frame; the fourth mounted on Muslin, being too large for mailing if on Card-Board.)

I—"Up for Repairs."

The sister mending her brother's torn clothes, will be a fine ornament in any house.

II—"Look Out."

A maiden at a cascade in the act of dashing water upon you,—a new and greatly improved edition of this new painting.

III—"Mischief Brewing."

A country boy with a "Jack o' lantern," which he has made out of a pumpkin, and he is telling his little sister of the sport they will have with it by and by, after nightfall.

IV—"The Strawberry Girl,"

One of the most popular pictures brought out in this country or Europe, (size 14 by 20 inches,) of which every home should have a copy.

As long as our supply holds out, we offer a choice of any one of the above four pictures, to every person subscribing for the *American Agriculturist*, who merely sends pay for cost of *mounting, packing*, and *forwarding free* by mail, viz:

For No. I....only 25 cents extra.
For No. II....only 25 cents extra.
For No. III....only 25 cents extra.
For No. IV....only 50 cents extra.
} For mounting, packing, and free delivery.

That is, *nothing* for the pictures, and only 25 or 50 cents extra for cost of mounting, packing, and paying postage or express. *Any one of these pictures is richly worth the cost of many subscriptions.* They are beautifully printed in Oil Colors, and have the appearance, and indeed the value, of Oil Paintings on canvas.

☞ Name your choice when sending in your subscription.

☞ These Pictures are offered to all subscribers now coming in. See "Trial Trip," page 248.

Grain from Kansas.—Mr. J. D. Ronstadt, of Ellsworth, Kan., brought us some fine specimens of rye and wheat which show that in Ellsworth and Bourbon Counties, at least, the grasshoppers have not destroyed all the crops. Mr. R. states that in several places the rye was 7 feet high. The top of these specimens were somewhat damaged, as in changing cars in one of the locust infested towns in Western Mo., the insects made a descent upon it, as it was the only green thing in the neighborhood.

Fruit Jars.—"Mrs. C. W. T." We have not had occasion to purchase any of late; the Cohansey Jar appears to be made on correct principles, and some of our associates, who have used them, give satisfactory reports concerning them.

Cable-Screw Wire and Silver-tipped Shoes.—"W. H. B." There is nothing "mysterious" about these advertisements which have appeared in the columns of the *Agriculturist* for several years, when you understand it. The advertisers are owners of the patents, and make the wire, tips, and machinery for manufacturing these shoes. They advertise in this "mysterious manner" for the benefit of their customers, who are the manufacturers of shoes with the above improvements. The articles are so well known that "W. H. B." will no doubt find them at the first shoe-store he comes across.

Obituary.—Moses Quinby.

In place of the usual "Bee Notes," we sadly insert a notice of the death of their author, which took place at his residence at St. Johnsville, N. Y., on May 26th, at the age of 65. When Mr. Quinby sent his article for the June *Agriculturist*, he wrote a private note about another matter, in his usual cheerful style, with no intimation that he was ill, and as we were expecting his contribution for July, a note came from his son, announcing his death as above. As to this event, which will be sorrowfully received by bee-keepers throughout the country, we have no particulars beyond what is here given. As an apiarian Mr. Quinby stood among the very first in the country, and he was a leader and often president at their conventions. His work, the "Mysteries of Bee-keeping Explained," is a standard authority, and his frequent contributions, the principal of which were given in the *Agriculturist*, were of real value. In our intercourse with Mr. Q. we were much struck with his simple-heartedness and old-fashioned honesty; he believed that in bee-keeping there was a great source of profit to farmers, who only needed proper instruction to save the vast stores of honey, now yearly allowed to go to waste. Though he made many valuable improvements in hives and their accessories, he never patented them, believing it the duty of every one to contribute to the general welfare. He had a thorough contempt for all quackery, mystery, and shams, and exposed them at every opportunity. The bee-keepers of the country have lost a progressive leader, and his friends will miss from their circle a genial and worthy gentleman.

The Locust at Dinner.

In this number of the *Agriculturist*, p. 261, is a notice of the seventh Report of our esteemed correspondent, Prof. C. V. Riley, as State Entomologist of Missouri, especially with reference to that part of the Report which treats of the locust or grasshopper. In that article it is stated that the author will find but few ready to adopt his suggestion to use the insects as food. A few days after that portion of the paper was made up, we had the pleasure of a visit from Prof. R., who was on his way to Europe for a short vacation, and he informed us that the locust had actually appeared at dinner—"not where he eats, but where he is eaten." Our friend is a very thorough man, and is not one to point out the way, but to lead it, and having advised people to eat hoppers, he at once set the example. A few bushels of hoppers were procured, and placed in charge of one of the best caterers in St. Louis to be served. A number of scientific gentlemen were invited, and a dinner was set forth at which the lively locust formed the sole animal food. Martyrs to science, some may think, but so far from this being the case, it was a feast that the veriest epicure might envy. Prof. R.'s vivid description of it fairly made our mouth water, and half inclined us to wish that certain natural laws did not prevent a visit of these much eating and more eatable *articulata* to the less favored shores of the Atlantic. While our friend cannot say that he "hankers arter" the raw hopper, just cook it, and frogs, terrapins, shrimps, and even the luscious oyster must give precedence to *Caloptenus* which all must admit is a much better table name for the delicacy than hopper or even locust. Those men of science began with Caloptenus soup, so fine that against all of rules of etiquette, they asked for "more"; then came hopper fritters, vastly better than any oyster fritters, and so on with roast, boiled, fried, and stewed of the same, each better than the last, until the climax of the feast was reached in locusts served with honey. This last dish convinced those present that even in Scripture times they knew something about luxurious living. It has often been said that the man who ate the first oyster was one of remarkable courage, though his name is lost to history, but in future times, when locusts shall be sold in our markets by the dozen, and laws are passed for the better preservation of this "valuable game," posterity will remember Riley and his associates as the first Americans who entertained the locust at dinner. All levity aside, why not eat insects? These locusts feed on the fat of the land and why should we not in turn eat them? It is against our prejudices, but when we coolly consider the matter, the locust is really no more repulsive than a shrimp or even an oyster, and that they are really acceptable to the palate these gentlemen enthusiastically declare. To our notion, Prof. Riley and his guests did a really good thing. In portions of Kansas, Nebraska, Missouri, and elsewhere, people were actually suffering with hunger, with all the while untold quantities of food around them, not only food which will sustain life, but of a remarkably palatable kind, and whatever jocular remarks may be made about this hopper dinner, we think that the gentlemen who partook of it did an eminently good work, and one which in future years may prevent much suffering.

American Pomological Society.

A few days ago we had the pleasure of meeting the President of the Society, Col. Marshall P. Wilder, and found him very joyful over the prospects of a fine meeting at Chicago, on the 8th, 9th, and 10th of next September.—The Col. states that the reports from the various states and territories are most encouraging, not only for a great exhibition of fruit, but what is of much more importance, full delegations of members. The western fruit growers are thoroughly alive to the matter, and it is quite time that those in the eastern states were astir. If some of the older and great fruit-growing states do not look out, they will be placed quite in the shade by Nebraska, which, in spite of grasshoppers, promises to out-do herself. The Illinois State Hort. Society, under whose auspices the meeting will be held, is sending out very full explanatory circulars, from which we extract the following:

"The meetings will be held in the M. E. Church, corner of Washington and Clark streets.

"Under the auspices of the Illinois State Horticultural Society, there will, also, be held, in the Inter-State Industrial Exposition building, a national exhibition of the fruits and other horticultural products of North America. Seven thousand square feet of space in the south end of the main floor and gallery of the great Exposition building will be assigned to the various states, territories, and provinces; and in the space assigned to each state, territory, or province, will be arranged the state, county, society or individual collections contributed therefrom. It will be our effort to have every section of the country from Nova Scotia to California, and from Key West to Oregon, suitably represented in a truly continental exhibition of fruits; and to this end we solicit your personal effort and influence to secure a complete representation of your fruit products.

"Upon the same day, and in the same building, the great Inter-State Exposition of the Arts and Industries will begin its four weeks' exhibition. Free tickets, admitting them to all parts of the Exposition during the convention, will be issued to all members of the American Pomological Society and to contributors of fruits for the Exhibition. Railroads will make reduced rates. The Wilder Medal of the American Pomological Society will be awarded for meritorious objects.

"Correspondence relating to the Exhibition should be addressed to the Secretary of the State Society, at Normal, McLean Co., Ill.

"Packages of fruit, with the names of contributors, may be addressed as follows: American Pomological Society, care O. B. Galusha, Chicago, Ill. Shipments should be made in time for arrival by the 6th of September."

Let us add that every fruit grower should become a member of the Society.

A House Costing $4,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan of a large house, provides ample and conveniently arranged apartments, containing the most requisite of modern improvements, suitable to the requirements of a good sized family. The general outline of the ground plan is nearly square —30 x 36 feet, securing the greatest economy in expense of construction, and embracing a liberal provision for comfort, and a suitable regard for appearances, without sacrificing one for the other. There is always a certain boldness in the exterior, or *elevation*, of a square double front, which no other style affords, expressive of substantial dignity. The two Bay Windows and Porch are united in construction, the Porch having its ends partly sheltered by the projecting Bay Windows, is a pleasant feature. The Second Story, Attic, and Cupola Windows, have circular heads, with heavy dressing. The main Cornice is heavily trussed; the Cupola is large and roomy, and all are proportioned to make this house worthy of almost any situation....The **Cellar** extends under the whole house, with walls of hard brick and mortar 8 inches thick, and 7 feet high, and should extend 1½ inches outside of the frame work of the house, so as to be "flush" with the sheathing. The cross-walls, as shown on the plan, are of the same materials—all such walls should have "heading-courses" every 20 inches, and if in sandy bottom, a suitable bedding should be provided, as described in the June *American Agriculturist*, which will insure a perfectly safe and satisfactory foundation. The AREA walls should be made of hard brick, with stone coping and steps, laid in cement mortar. All Chimneys should be started and laid up with the foundation, and the materials interlaced to bind them together; this will insure additional strength to both foundation and chimney.—We recommend plastering or "laying off" the ceiling of the cellar, with one coat of brown mortar, at a cost of twenty-five dollars, which would be a permanent benefit to the whole house, in preventing the damp cellar air from rising up through the floors and framework of the house. Such air is almost sure to be vitiated by decaying vegetable matter, and is the undoubted source of much disease. Another advantage derived from such plastering, is the shutting out of rats and mice from the frame work of the house, and lastly it affords an opportunity of purifying and sweetening the cellar easily, by (the simplest of all means) a coat of whitewash.... The materials used in the FRAME, are indicated in the estimate appended below. SILLS should be framed for each cross, and outside wall, so as to secure equal bearings, and allow for even shrinkages; and when put in position, they should be bedded in mortar, to prevent any inequalities in the bearings of the frame-work, to strengthen the foundation, and also to effectually shut out cold air from getting between the cellar ceiling and the first floor. All Beams and Studding are placed 16 inches from centers. The first tier of Beams should be framed into the Sills, and their tenons wedged from the outside, to "draw them home." They should also bear upon the wall equally with the sill. All beams having a span of 12 feet and over, should have at least one row of cross bridging of 1½ x 3 inch "fencing."—The second and third story beams, are notched over the ties, and spiked fast. The Cupola posts rest directly on the center girts, and the principal roof timbers are framed and secured to these posts. In this frame there need be no tendency to self-destruction, so common in large buildings, such as oblique or outward thrusts, or irregularity of bearings, but a perfect "repose" is secured to every piece of timber in the house. The BAY WINDOW framework (see fig. 5), is one inch less in depth than the principal sills of the house, to allow for the thickness of the boarding beneath them, so that the water table when put around the house, may be in line. The distances given on the diagram of the bay frame, may be relied upon as correct. "Bay windows are apt to be cold," is often said, but a sure preventive of such "cold" is easily secured, by filling in between the beams and panels with dry sand, which will make them as tight as any other part of a house....The *character* and *quality* of a house depends greatly upon the material, and manner of **Siding**. In our estimate we have provided for mill-worked sheathing, which should be put on diagonally, and thoroughly nailed to the frame, which will serve the double purpose of securing more warmth and strength, than any "filling in" of brick, and is less expensive. A strip of the same thickness as the sheathing, and two inches wide, should be first nailed to the sill, close down to the masonry, to prevent the air from entering the joints of the sheathing, and following them upwards into the house. Tarred paper is next stretched over the sheathing, when the window frames, water-table, and corner-boards should be set, and lastly the Novelty-siding put on, and double nailed to each stud. The **Windows** are arranged for each sash to be hung, and all to have blinds. All windows above the first story, have "circular heads," with caps turned of 4-inch timber. The Keys shown on the elevation, are sawed out at the back, so as to fit over the caps, (not cut through them). This is much simpler, more ornamental, and does not impair or affect the solid head....The **Roof** projects twenty seven inches beyond the frame of the building, and is covered with I. C. Charcoal tin, laid and soldered in best manner, on sound hemlock boards. The gutters of the main house, are made as described in the May *American Agriculturist*.....The **First Story** plan, (fig. 3), shows the general division of four rooms and three halls. The Entrance-hall or "Reception-room," is 7 x 12 feet. The Stairway-hall is also 7 x 12 feet. The Rear-hall is 7 x 7 feet. These halls are divided from each other by sash doors. The Entrance-hall is divided from the Parlor and Dining-room by large *double* doors. The advantages of dividing the halls in the manner shown, will be obvious to any one when they consider how cold, windy, and cheerless most halls are. By this arrangement all drafts are prevented, either when opening the entrance door, or when passing from one room to another. The inside double doors may be swung open altogether, throwing the principal rooms of the lower floor into one spacious room if occasion should require it for a large company, without altering to any material degree, the temperature of these rooms.—The STAIRWAY hall contains the principal stairs, which are of the easiest "platform" construction, so arranged, that a more private stairway is entirely unnecessary.—The REAR HALL is the common hall of the house, and is easily reached from every part.—The PARLOR is the largest room, has a Bay-Window, Marble Mantel, Fireplace Heater, and is separated from the Library by Sliding Doors. The DINING-ROOM has also a Bay-window, Marble Mantel, and Fireplace Heater, and is intended as the LIVING-ROOM. It is conveniently connected with the Kitchen, Stairway-hall, Entrance-hall, and has a good Pantry (*c*).—The *Kitchen* is separated from the

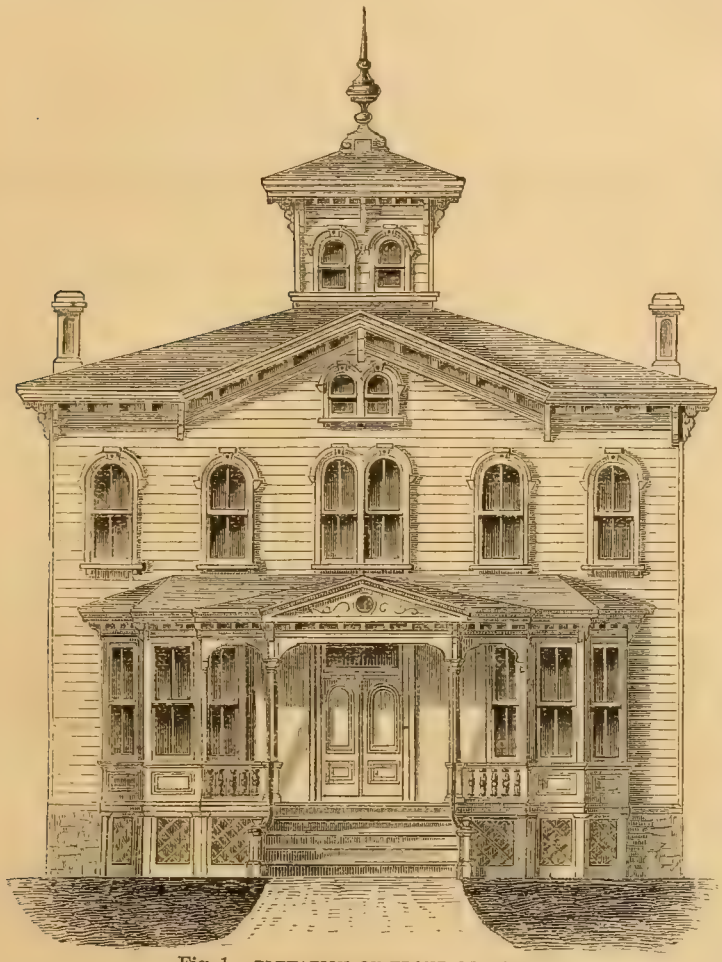


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

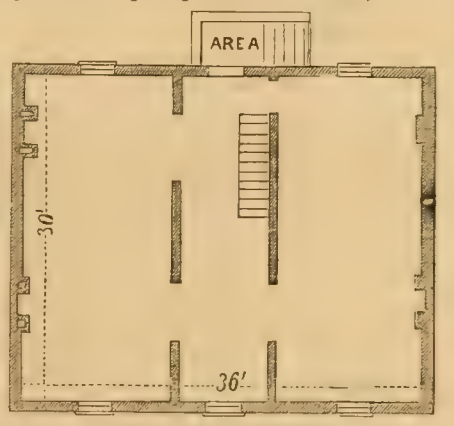


Fig. 2.—PLAN OF CELLAR.

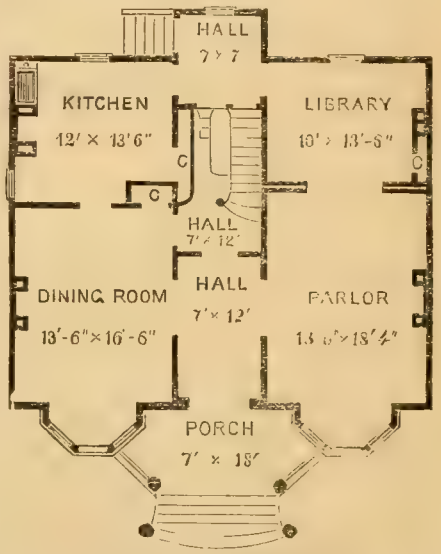


Fig. 3.—PLAN OF FIRST FLOOR.

Dining-room by a single door, and in close proximity to the rear entrance, and cellar stairway doors. It contains one large Closet, Range with elevated oven, warm-closet, and water-back, boiler, sink, and wash-tubs.—The KITCHEN should be wainscoted three feet high, with $^5/_8$ x 3 inch ceiling-boards. The Clock, and Lamp Shelf should be put between the closet and hall doors, and not over the range. The advantage of having the kitchen on the same floor with the Dining-room, must be apparent to every one....The **Second Story**

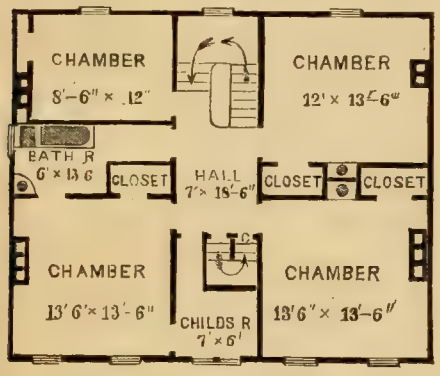


Fig. 4.—PLAN OF SECOND FLOOR.

plan, (fig. 4), is divided into four large Chambers, a child's Bed-room, a Bath-room, five Closets, with a good-sized Hall.—The two front chambers are heated by hot-air from the "fire-place heaters" of the first story, so that they are always comfortable in the coldest weather. For many reasons we prefer the fireplace heaters over any other. They take little room, are cheerful in appearance, easy of management, and economical, requiring attention but twice in twenty-four hours, if hard coal is used. Each heater will keep two ordinary sized rooms comfortable in winter, and are not unsightly in summer. Like any other device for heating, the perfect and satisfactory results depend altogether on the manner of setting them. In no case should such a heater be expected to develop its full power when placed in a fireplace in so close proximity with the brick as to allow the hot air to strike against and be absorbed by them. The heater should be enclosed in a jacket of sheet-iron, having an eight-inch opening, and a collar at the top. Attached to the collar and "built in" the chimney, should be an eight-inch tin pipe, connecting with the register-box in the second story. Above this box this flue should be entirely closed. The smoke-pipe should be four-inch, and pass up through the

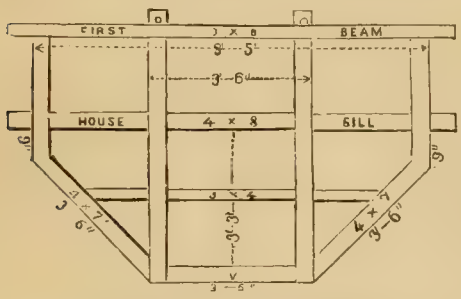


Fig. 5.—FRAMING OF BAY-WINDOW.

eight-inch tin-pipe to the register-box, where an elbow should be put on, turning the smoke into the side flue adjoining. The side flue should have no other side openings.—The BATH ROOM has Bath-tub, Seat Closet, Wash-basin, with cold and hot water faucets. Each chamber to the right of the hall to have wash-basins.—These chambers have marble mantel shelves, resting on plaster trusses, at an expense of six dollars each, which answer the purpose that a twenty-dollar mantel would, and are really more cheerful and appropriate for such rooms....The **Attic** is reached by the enclosed stairway, and is arranged so that two or four Bed-rooms may be "finished off" as required. The Tank is placed on the floor over the Bath-rooms, and is supplied partly from the roof, and partly by the force-pump in the kitchen. All the remaining space in the Attic may be used for storage, etc.....

The **Cupola** room is 7 x 7 feet, reached by a light stairway. The head-room is made to subserve the purpose of a stand or table, so that really very little room is taken away by the stairs....Very few people have any definite idea of the expense of the separate items that are comprehended under the head of **Plumbers' Work,** The following estimate in detail of Plumbing, required in this house, gives facts and figures enough to enable any one to decide just how much plumbing can be done for any given sum, viz:

Sheet Lead, 3½ lbs. to square foot, for Tank, 2x4x6 feet with stop cock	$21.00
Bath Tub, 10 oz., $15; Plated Flange and Thimble Cock, $6; Plated Plug and Chain, $1.50	22.50
Pan Closet, $12.25; Plated Cup and Pull, $1.50; French Bowl, $2.20. Trap, 4 in., $3.75	19.70
3 Wash-basins, $1.70 each; Marble Slabs, $5 each; Plug, Stud, and Chain, $1.50 each; 2 Cocks, Trap, Screw Plug, $3.00 each	36.60
1 Iron Sink, 18x24 inches, $2; 2 Cocks, $3.50; Trap and Screw, $1	6.50
35 gall. Copper Boiler, $27; with Stand, $2	29.00
Force Pump, with brass cylinder	17.00
20 feet 4 in. Iron Soil Pipe, @50c. per foot	10.00
372 lbs. Supply and Circulation Pipe, @8½ c. per lb	31.62
125 lbs. Waste Pipe, @8¼c. per lb	10.63
Solder, Tacks, and Charcoal for this job	3.00
5 days' Time, Plumber and Helper, @6 per day	30.00
Total amount of cost	237.55
Ten per cent, added by plumbers in estimating	23.75
Total PLUMBER'S CHARGES for the job	$261.30

To the bill for plumbing we add the cost of:

Range, with Elevated Oven, Warm Closet, Water Back, Set complete	$80.00
Heaters, 2 "Fire Place," with Registers and Heating Pipes, $45 each	$90.00

Cost.—Estimate of cost of building by this plan. It will be noticed that the prices given for Bay Windows, Porch, Lobby, Stairs, Windows, Cupola, and Doors, include materials and labor complete, and that the amount of carpenter's work is for the balance of such labor required on the job:

100 yards Excavation, @ 25c. per yard	$25.00
24,000 Brick, furnished and laid, @ $15 ₩ 1000	360.00
950 yards Plastering, 3 coats, @ 35c. per yard	332.50
6578 feet Timber, @ 2¼c. per foot	148.00
viz. 4 Sills, 4x8 in. x30 ft. long. 70 Beams, 2x8 in. x15 ft. long.	
2 Sills, 4x8 in. x 36 ft. long. 60 Beams, 2x8 in. x22 ft. long.	
10 Posts, 4x7 in. x24 ft. long. 15 Beams, 3x8 in. x22 ft. long.	
Ties, 4x6 in. x390 ft. long. 4 Hips, 3x8 in. x18 feet long.	
4 Cupola Posts, 4x6 in. x 15 ft. 4 Valleys, 3x8 in. x18 ft. long.	
Plates, 4x6 in. x 132 ft. l'g. 14 Rafters, 3x5 in. x17 ft. long.	
100 Joist, 3x4 inches x 13 feet long, @ 22c. each	22.00
400 Wall Strips, 2x4 inches x13 feet long, @ 16c, each	64.00
320 Sheating, ⅞x10 inches x13 feet long, @ 25c	80.00
200 pounds Tarred Paper, @ 5c. per lb	10.00
320 Novelty Siding Boards, 9½ inches, @ 38c. each	121.60
195 Hemlock Roof Boards, @ 22c. each	42.90
240 Tongue and Grooved Flooring @ 35c. each	84.00
168 feet Cornice, 70c. per foot	117.60
17½ Squares of Tin Roofing, @ $10 per square	175.00
190 feet Gutters and Leaders, 10c. per foot	19.00
Cupola complete, except Tin (included above)	100.00
2 Bay Windows complete, @ $75 each	150.00
1 Porch complete, $75; 1 Lobby complete, $50	125.00
4 Stairs complete, $100; 17 Windows complete, @$15	355.00
5 Cellar Windows, @ $6 each	30 00
34 Doors, @ $12 each	408.00
2 Marble Mantels, @$30 each	60.00
4 Marble Shelves, @$6 each	24.00
5 Kegs Nails, @$5 each	25.00
Painting	200.00
Cartage, average one mile	56.40
Shelving, Base, Bell-hanging, etc	73.70
Carpenter's Labor	360.00
Plumbing, as detailed above	261.30
Range, $80; 2 Heaters, @$45, $90	170.00
Total cost of House	$4,000.00

[EDITORIAL REMARKS.—This is a fair estimate of the cost in the vicinity of New York City, for good materials and good workmanship. No calculation is made for fencing, out-buildings, drainage, etc. If the house is erected in or near a city or large village, where there is now, or likely to be in the future, a supply of illuminating gas, the gas-pipes should be put in when erecting a house, as it can be done with little trouble and small expense. We always advise providing for "saving steps," by inserting plenty of bells and speaking tubes. Ten dollars' worth of these will be repaid every year. For full particulars and engravings of these, and other conveniences, see *American Agriculturist* for May and June, 1870.]

Lunch Time in the Field.

The engraving on our first page illustrates what we have often enforced, viz., the advantage of a lunch in the field for working animals. The farmer who leaves his team for half an hour or less, while he goes to the house to refresh himself, should not forget that the animals, which have labored harder than he, also need refreshment. A lunch in a fence corner, from a lunch-box which may be hung upon the fence, is easily given, and will be gratefully received. The time thus spent is not lost, but is more than regained in the alacrity with which the team bends itself to its work again. If this practice were adopted through the planting and harvest season, the working stock might be kept without loss of condition, and would not need feeding up afterwards, to regain the flesh they have been unwisely permitted to lose. In the large cities, small bunches of green rye or fresh green clover are prepared for lunches for the working teams, between meals, when resting. The average condition of the city team is far above that of farmer's teams, and this to a great extent is due to the regularity with which they are fed, and the frequency with which they are watered. Frequent light drinks are much better than copious ones at long intervals, and the maxium, "little but often," will apply to both feeding and watering working stock during the warm weather.

Science Applied to Farming.—VII.

BY PROF. W. O. ATWATER, WESLEYAN UNIVERSITY, *Middletown, Conn.*

Cotton-Seed Cake—Grain—Beans—Peas—Fodder Corn—Their value and most economical use.

Cotton-Seed Meal.

To the inquiries of Mr. A. B. Fuller, Conn., and others, we answer, the figures in Table **6**, (April No.), refer to the *decorticated* cotton-seed meal, that from which the leathery covering of the seed, or hulls, have been removed in preparing the meal. That mentioned in Table **2**, (March No.), is undecorticated and contains the hulls. The composition of each is here shown:

Table 11. COTTON-SEED CAKE (MEAL). 100 POUNDS.	Water.	Ash.	Total Organic Substances.	Crude Fiber.	Digestible Organic Substance.	This digestible Organic Substance consists of: Albuminoids.	Carbo-hydrates.	Fats or Oils.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Decorticated	10.5	7.7	82.2	9.6	55.7	28.8	17.	9.9
Undecorticated	11.5	6.3	82.2	20.8	37.8	18.1	14.1	5.6

Each kind contains 82⅕ lbs. of organic substance in the 100 lbs., but of this 82 lbs. in the *decorticated* seed meal, over 55 lbs. are digestible, while in the undecorticated, less than 38 lbs. are digestible and nutritive, the hulls in the latter having much indigestible crude fiber, as shown in fourth column. In some analyses, the undecorticated seed meal has yielded as much as 27 per cent of crude fiber. Some feeders think the hulls in the undecorticated meal is injurious to stock; others have used it in large quantities without observing evil results. Whether this be a serious objection or not, the decorticated is nicer, cleaner, and what is of great importance, it contains nearly 50 per cent more of digestible nutritive substance, as shown in fifth column of Table **11**, above.

Feeding Value of Different Foods.

Mr. Buchi, of Nashville, Tenn., a reader of the German *Agriculturist*, who is engaged in dairying, asks: "When corn-meal is worth $2 per 100 lbs., what is the value of 100 lbs. of wheat bran, ship-stuff, cotton-seed meal, oats, or wheat?"—Mr. G. Ferguson, of Port Stanley, Ontario, asks: "When peas, corn, and oats sell at the same price per 100 lbs., which is the cheapest food?"—If Mr. Buchi were a farmer in Germany, instead of Tennessee, he would have one of the Farmers' Pocket Diaries I have mentioned, containing the composition of these and perhaps 200 other kinds of food. Our Tables 2 (in March), and 6 (in April), were translated from those prepared by Dr. Wolff, Director of the Hohenheim Experiment Station, who has studied these questions for 25 years. These tables are the results of thousands of experiments performed at his own and many other Experiment Stations. He is thus able to tell us the absolute and relative amounts of albuminoids, carbo-hydrates, fats, etc., contained, on the average, in different food materials, how much is really digestible in each. He has also calculated the money values. That is to say, after ascertaining a fair price per lb. for the *digestible* albuminoids, carbo-hydrates, etc., he computes the value of these nutritive materials in each 100 lbs. of hay, grain, etc., etc. The values thus

found agree essentially with the German market prices of these products.

Table **12**, below, gives the results of Dr. Wolff's calculations. Note well, that the last column gives only the *relative* value of each, and not the absolute or market value in any one place. Thus, taking *rye* as a basis, if in a certain amount of this, say 30 lbs., the digestible albuminoids, fats, etc., are worth $1.00, then the same weight of corn, (30 lbs.) is worth 94 cents, cotton-seed meal, $1.68, and so of the other articles named.

Table 12.

KINDS OF FODDER.

PERCENTAGE OF DIFFERENT SUBSTANCES, AND RELATIVE VALUE.

	Total Organic Substance.	*Indigestible Organic Substance.*	*Digestible Organic Substance.*	*The digestible organic substance consists of*			*Money value—Rye worth $1 for same weight.*
				Albuminoids.	*Carbo-hydrates.*	*Fats.*	
Rye (Grain)	83.9	9.4	74.5	9.9	64.	1.6	$ 1.00
Oats	83.	27.5	55.5	9.	41.8	4.7	.84
Wheat Grain)	83.9	7.9	76.	11.7	63.1	1.2	1.07
Indian Corn	84.1	13.1	71.	8.4	57.8	4.8	.94
Peas	84.	10.7	73.6	22.	49.9	1.7	1.38
Ship Stuff (St. Louis) *	85.9	18.1	67.8	8.7	57.1	2.	.88
Wheat Bran	81.5	29.6	51.9	10.9	37.6	3.4	.87
Cotton-seed Cake decor'd)	82.2	26.5	55.7	28.8	17.	9.9	1.68
Meadow Hay (inferior)	80.7	41.9	38.8	3.4	34.9	0.5	.45
Meadow Hay (average)	79.5	32.1	47.4	5.4	41.1	0.9	.59
Meadow Hay (best)	76.8	22.8	53.5	9.2	43.1	1.2	.78
Red Clover Hay (average)	78.7	32.4	46.3	7.	38.1	1.2	.65
Pasture Grass	18.	5.3	12.7	2.4	9.9	0.4	.21
Fodder Corn (green)	16.7	5.8	10.9	0.8	9.9	0.2	.12
Fodder Corn (dry)	80.8	42.4	38.4	1.1	37.	0.3	.34
Wheat Straw (winter)	81.6	47.7	33.9	0.7	32.8	0.4	.29

* Calculated from an Analysis by Prof. F. H. Storer.

By comparing the above figures, our correspondents, and others, may judge of the relative amounts of nutritive ingredients in the different foods named, and of their *general* money value, taken by themselves, without reference to any special object in feeding, or what other materials they are to be mixed with. But, Mr. Buchi, for example, is feeding milch cows. If he feeds for butter chiefly, and has good hay, some of the best farmers in this region would tell him to use, along with the hay, corn-meal, and some oats, and, perhaps, cotton-seed meal. If he sells milk, and wants large quantities without reference to any special quality, he would probably find it profitable to use bran of wheat or rye, with cotton-seed meals and some roots.

Mixing Value of Grain, Bran, Cotton-Seed, etc.

The table, (12), above, shows that there is little of digestible albuminoids in corn-stalks, straw, and inferior hay, (3/4 lb to 3 1/2 lbs. in 100 lbs. of the fodder, or only 1/8 to 1/2 as much as in fine quality hay). As previously explained, (*American Agriculturist*, May, 1875), to use these coarser foods economically, we must supply their lack of nitrogen or albuminoids. It is very evident then, that the decorticated cotton-seed meal or cake, with its 29 per cent of digestible albuminoids, is worth more for mixing, than corn, wheat, oats, or ship stuff, which contain only 8 1/2 to 11 per cent of this. The feeding values of cotton-seed meal, bran, oats, corn, etc., are not exactly proportioned to their content of albuminoids. But that they are approximately so, is abundantly shown by experience, by feeding experiments, and by careful scientific investigation. I hope before long to describe experiments bearing directly on this subject.

Fodder Corn.

This bids fair to be a dry season, and pasturage and hay may be short. One of the best substitutes for these is fodder corn. Practical men differ widely about the value of corn-stalks for fodder. Some attribute their poor success in its use to its "being so watery, and containing so little nutritious substance." That this cannot be wholly correct is shown by comparison with pasture grass in the table above. The corn contains on the average 16.7, and the grass 18 per cent of organic substance, (first column); the remainder in each case being water, with a small quantity of ash, (mineral matters). The proportions of digestible substance are likewise nearly the same, 10.9 and 12.7 per cent, while the amounts of carbo-hydrates and fats are almost identical. The great, and, in fact, the only essential difference in the composition of the two is in the nitrogenous substance, (fourth column). The grass contains 2.4 per cent of albuminoids, while the corn contains only 0.8 per cent, just one-third as much. Grass is a natural and economical food for cattle. It furnishes albuminoids and carbo-hydrates in just about the proportions naturally adapted to the wants of the animal. But animals fed with corn-stalks only, would have to consume a very large quantity to obtain a sufficient supply of albuminoids, and these alone are not economical foods. To be made so, other materials rich in nitrogen, as young clover, beans, peas, or oil-cake, should be added. Corn-meal or ship stuff will also serve the same purpose, though less economically as regards food material.

So says our theory, and I find whenever I inquire among our most successful practical men, that this is confirmed by their experience. I hope soon to present some of the results of their experience on this point which have been promised, and will certainly be very interesting.

Ogden Farm Papers.—No. 65.

BY GEORGE E. WARING, JR.,

As I am in no way responsible for making up the *Agriculturist*, and never know what it is to contain until it is actually sent to subscribers, I think it will not be out of place for me to call especial attention to the June number. It is sometimes said that this paper is chiefly valuable as a stepping-stone to educate the public up to the point of desiring something higher. This may be true in so far as it relates to the necessity for treating a great variety of topics, and to the limited space that prevents long disquisitions on abstruse points. Doubtless many are stimulated by what they see in these columns to pursue their investigations, whether scientific or practical, through other channels, where a limited number of readers find long essays on various agricultural subjects. At the same time, although I am in the constant receipt of a number of American and foreign agricultural publications, I cannot now recall a single issue of one of them which contains so much practical information, and so many valuable suggestions, as this single number of the *American Agriculturist* for June, 1875.

To begin with Prof. Atwater's paper, on page 213, we have, in an article only two columns long, a concentration of nearly all that is practically useful in hundreds of pages of scientific dissertation. It is not to be understood by this that he has here described the various experiments by which certain results have been reached, or even alluded to the very interesting and instructive reasoning with which the accounts of these experiments have been accompanied. What he has done has been simply to take the cardinal fact developed by these investigations, strip it of all comment, and set it forth with the support of one of the most striking experiments by which it is demonstrated, in a form of real value to every farmer who owns an acre of grass, and who has the intelligence to understand a plain statement. We all know that a general impression exists that early-cut hay is more valuable than that which has been allowed to stand too long, and the best farmers make it a point, so far as possible, to cut their grass and clover when nearly in full blossom; not one in ten thousand of these understands, except in a very general way, the *reason why* it is better to do so, and many others, if they knew that reason, instead of having only a general impression about it, would at once make their practice conform to the recommendation. No one can read Prof. Atwater's statement intelligently, without regarding the early cutting of hay as not only advisable, but absolutely essential to the most successful hay-making.

The account of Mr. Crozier's experiment and apparent success in crossing the Southdown and the Cotswold is a step in the right direction. It may, of course, well be doubted whether he has yet succeeded in establishing a true and persistent breed; in fact, he evidently doubts it himself. It may even be early to give a name to the new race; and the portrait of one of the animals published, will probably be found in the end to be rather an interesting record of progress than an illustration of an established success. It is only five years since this cross was made, and twenty years would be a short time in which to establish a persistent new race, but if Mr. Crozier pursues his plan resolutely and intelligently, there is reason to hope that he will give to the country a new breed of sheep better adapted for many of our circumstances than any we have yet had.

"Walks and Talks" is this month full of good sense and solid information, and Mr. Lawes' often-adduced experiments are made to serve an unusually good purpose, as showing how constantly the *profit* of a given crop bears relation not only to the extent to which it is manured, but also to the kind of manuring it receives. If any one item can be said to be the keynote to profitable farming, it is just this: a realization of the value of the right kinds of manure applied in the right proportions to certain crops. Concerning the controversy between the author of these papers and Mr. George Geddes, I prefer to say little; as they are both of them men from whom I learn, rather than men between whom I should presume to decide. I have only to say, (since I am referred to in connection with the discussion), that I am still of the opinion that there is a loss of nitrogen, or at least a loss of its most valuable form, constantly going on in the soil, and especially so in a cultivated soil, and that this loss is greater under summer-fallowing than under summer cultivation. In other words: that whenever the soil is plowed or stirred, so that the admission of air is facilitated, it sustains a loss in available nitrogen. That in many soils and in many circumstances this loss is more than compensated for by other effects of the oxygen which causes it, I do not doubt. In the present state of our knowledge on the subject, the question whether the gain more than counterbalances the loss, can only be decided by actual experiments with different soils. Probably summer-fallowing will be profitable in some cases and not so in others, and from the opposite views held by these disputants, both practical observing men, it is not unreasonable to think that it may be advantageous with Mr. Harris and objectionable with Mr. Geddes.

It is not often that we find in the same paper two articles that play into each other's hands, as do those of "Storing Brewers' Grains," and "Curing Green Corn-Fodder"; the principle that operates in both cases being essentially the same. The recommendation with regard to brewers' grains is perhaps of somewhat limited application, but if the storage of corn-fodder in the manner described can be made as successful here as in the French experiments described, there is hardly a limit to its importance. The principle involved is not a new one, and, indeed, I described in these papers some years ago a similar custom prevailing in parts of Germany. Of course, in cold climates it will be necessary to make the protection against frost very complete, although doubtless the slight heat of fermentation will always have some effect in protecting the material. Throughout nearly the whole country there is no crop that can at all compare, when we consider both its value pound for pound, and the enormous yield that may be obtained from an acre, with corn-fodder. Whether the purpose be to make butter, or cheese, or beef, or to keep young stock in thrifty, growing condition, it is at once most palatable and nutritious, and by its aid we may keep a larger stock on a given area of land than would be possible with any other form of food adapted to our climatic conditions. The statement in the article under consideration and in the accounts of the German practice, that fodder kept in this way retains its feeding value throughout the entire winter, seems to be fully sustained, and in my own branch of farming—the making of butter—if there were no other argument to recommend the system, it would be sufficient that it furnishes a succulent green food throughout the winter season, of a sort that will ensure a large yield at reasonable cost, and will maintain almost a summer-coloring of the product of the dairy at a time when, with our ordinary forage, butter is almost as white as tallow. The appliances for storing corn-fodder, as described, are simple and inexpensive, consisting chiefly of a well-cemented, water-tight pit in the ground, well protected from rain and frost. Perhaps it would be well to add to the directions given some provision for protecting the face of the heap

from which the food is being used, from too much exposure to the air. This may be well accomplished by the use of india-rubber blankets, to be closely applied after each taking out.

The article on "The Flushing of Drains" is very important, but a better method for closing the outlet of the silt-basin to be used for flushing, would be to have a ball of india-rubber, or of tightly-wound rags, fitting the mouth of the outlet, attached to a string by which it may be withdrawn at pleasure.—"The Shooting Nuisance" is an article that will appeal to every farmer. I imagine that there is generally too much human nature in the average farmer to allow the insolent conduct alluded to to be very prevalent; but the injury we constantly sustain from the destruction of insect-eating birds is almost incalculably great, and we need something more effective than stringent legislation to prevent it. We need, rather, a realization on the part of all farmers of their own vital interest in the abatement of the nuisance. This given, they will soon find means, if only by the simple application of the law of trespass, to prevent the havoc.

Some of my readers may perhaps say that these matters, having been set fully before them in the paper in question, it was hardly worth while to use my space and their time for a recapitulation; but good as the *Agriculturist* always seems to me, I am convinced, from conversation with many of its readers, that its best points are often passed over; that its great practical value is not always appreciated; and, especially, that the articles in question fully justify this reference.

I have previously described the experience of Mr. John R. Brewer, of Massachusetts, in keeping poultry in connection with sheep, he having found that the fowls kept the sheep and lambs entirely free from ticks. He has just written me a letter, saying that he is still further convinced by his experience and that of his neighbors for the past year, that the plan is a good one, it having been universally found that wherever the sheep and the fowls ran together, there was an entire absence of ticks, and that where fowls had access to one part of a sheep-pen and not to another part where the rest of the flock was kept, the one lot were overrun with the insects, and the other were entirely exempt. Not being a sheep-raiser, I have no opportunity to test this matter for myself, but the suggestion is certainly worthy of the consideration of all who are concerned in the matter.

Reports concerning the use of deep cans seem to be increasing month by month, and, considering the imperfect way in which the experiments are made, the results are often better than I should have expected. It seems to be generally thought that the great point is to set the milk in deep cans, and to keep the cans in a room with a low temperature. This is not sufficient for the full benefit desired. Air, even though kept almost at the temperature of melting ice, will not withdraw the heat of the milk so rapidly as water will, and this rapid withdrawal of heat is the important point. All who propose to experiment in this matter should provide themselves with cans not too large, (8 inches in diameter is better than a larger size), and should float them in cool water, if possible not much above 50°, and certainly below 60°. Even less than 50° would probably be advantageous, but I cannot speak on this point from experience. The possible danger in having the temperature too low would be that the heat would be withdrawn too rapidly, that is, before the volatile odors of the milk, which often affect the taste of the butter, have been driven off. Very sudden cooling, as in passing the milk through a coil of pipe surrounded with ice, has the effect of fixing these volatile matters, to the certain destruction of flavor in the product. Too high a temperature, especially in the summer time, allows the milk to curdle, or to become loppered, or stringy, before all the cream has had time to rise. Much further experimenting will be necessary before the precise point that is best for ordinary milk can be determined, but my own experience (with Jersey cows), which has been constant for the past four years, winter and summer, shows that in my case a perfectly satisfactory result, including the securing of *all* the cream, is attained with a temperature of the water of about 54°.

The question is still asked, with rather surprising frequency, whether it is not an objection to Jersey cows, that they are apt to have a preponderance of bull calves. In looking over the record of a Jersey stock for seven or eight years past, I find that I recorded in all just 100 calves. Of these, 41 were bulls, and 59 were heifers. Since January 1st, this year, 13 calves have been dropped. Of these 11 were heifers, which is an unusually large proportion, and makes the owner feel particularly content.

I have now been breeding Jersey cattle since the spring of 1868. I started out with the belief that certain characteristics might be improved and established, provided the work were carried on with an eye single to them, and provided they were not conflicting. I have therefore applied myself to such qualities as indicate good milking and rich creaming. The questions of the coloring of the hair, and of size, have been disregarded, and even the question of form has been made secondary. What I have sought to attain has been, good escutcheons, or milk-mirrors, combining width, hight, and uniformity; evenly developed, large udders, with a good width and depth behind, and running well forward under the belly; large and evenly-placed teats; full and knotted milk-veins; heavy hind-quarters, and light fore-quarters; thin necks; yellow-lined ears, and small horns, free from much white. The result of my seven years' work shows a greater advance in these directions than I should have dared to hope for within so short a time, and the items of fine heads, thin tails, and light limbs, being characteristics of good dairy animals, have in a good degree followed as accessories. I have a good many ragged hips and sloping rumps remaining, and I have seen many herds which were more beautiful to the eye. In the matter of color, I have left nature to her own sweet will, and have every combination from half-fawn and half-white to solid brown, with black switches. The coloring of the sires and dams seems to have little effect on the coloring of the progeny; solid-colored cows and solid-colored bulls sometimes give us colors with a goodly admixture of white, and the calves of cows having much white, are sometimes of solid color, all of which we regard as unimportant, and as being only what one should expect in breeding to a race which for more than a hundred years has been characterized by a various coloring. I now believe that if our breeding is continued for seven years longer, I shall only make further progress in the same direction—that I shall greatly improve the dairy value of the animals, and not interfere in the less important directions. When I have achieved *perfection* in the end I am now seeking, I shall hope, incidentally, to have refined the back lines somewhat.

I have just paid a visit to Mr. John Carter Brown, of East Greenwich, R. I., and have had the gratification of examining his cow "Young Pansy," which I bought for him for a very high price, on the Island of Jersey, as a yearling in December, 1872. She was a fawn and white calf of very fine appearance, and with a perfect escutcheon. It was by this latter chiefly that I judged her, and it is very satisfactory now to see how well that indication has been supported. She is now four years old, and dropped her third calf in April, and though small, is as magnificent a cow as I ever saw of any breed. Finding that she could not be bought for even a very high price in money, I offered for her the best two animals in my herd, but did not secure her. Her bag, when full, measures 50 inches in circumference; is 84 inches deep at the rear, and is 16 inches long. Her front teats stand 8 inches apart; hind teats, nearly 6 inches apart; and the teats are 4½ inches apart at the sides, all being large and of good form, and standing squarely out from the even surface of the udder. I wish that she might, in her present condition, make the round of the agricultural fairs of the country, to show what the Jersey breed is capable of.

How to Make a Bolt.

Though bolts are made so cheaply by machinery, that a general supply can be kept on hand, still cases may occur, in which one will have every kind of bolt but the one needed; then the knowledge of how to make one is useful. An old bolt can have a new screw-thread cut upon it, or a new head put on it, in a few minutes. To cut the thread, the bolt is fixed in a vise, and a screw-plate, fig. 1, is used. This is an iron frame, which holds dies of various sizes for different

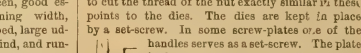
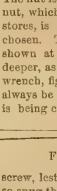


Fig. 1.—SCREW PLATE.

shapes or pitches of the screw-thread. Those chosen must of course correspond to the shape and pitch of the thread of the nut, and taps are made to cut the thread of the nut exactly similar in these points to the dies. The dies are kept in place by a set-screw. In some screw-plates one of the handles serves as a set-screw. The plate is fitted to the end of the bolt, and screwed up tight, a few drops of oil are then put upon the dies and bolt, and the plate is turned as though it was to be screwed on to the bolt. As the dies cut their way into the bolt the set-screw is screwed a little tighter and the plate is turned back and forth, but every time is turned a little further on to the bolt, more oil being used as the plate is worked down. It must never be worked dry, or free from oil, or the dies will heat, and their temper be lost. The nut is threaded in much the same way. A blank nut, which may be purchased ready made at the stores, is fixed in the vise, and a proper tap is chosen. The taps are made with a slight taper, as shown at fig. 2, so that the thread may be cut deeper, as the tap is screwed downwards. A tap-wrench, fig. 3, is used to turn the tap, and oil must always be used to assist the cutting. As the thread is being cut, the nut should be tried upon the



2.—TAPS.

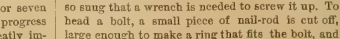


Fig. 3.—TAP WRENCH.

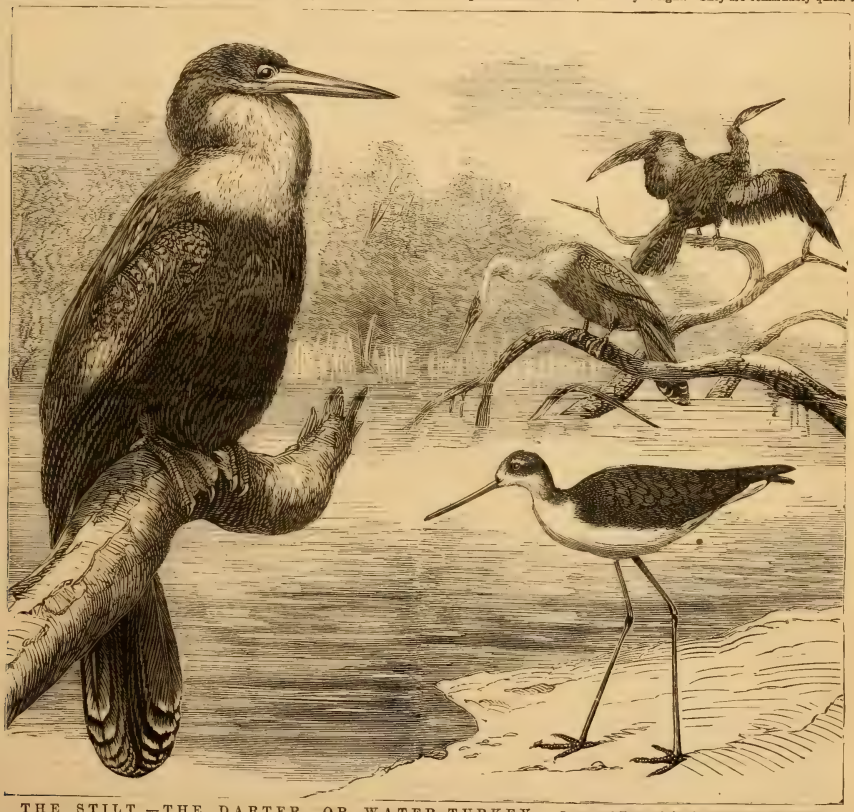
screw, lest it be made too large. The fit should be so snug that a wrench is needed to screw it up. To head a bolt, a small piece of nail-rod is cut off, large enough to make a ring that fits the bolt, and the ends are heated and hammered out, as shown at fig. 4. The ends are then brought to a welding heat, and joined on the horn of the anvil, so as to form a ring. The ring is then, while hot, put on to the end the bolt, fig. 5, and the bolt and ring are

Fig. 5.—BOLT. Fig. 6.—MOLD. Fig. 4.—RING.

then brought to a welding heat, the parts being previously cleaned from scale, and a little powdered borax placed on the joint. They are then welded together, and brought to a proper shape. To shape the head, which ought to be square, a mold is used, fig. 6, in which the bolt is placed, while the head is hammered flat. The corners should be beveled off a little, which gives a good finish to the head. Implements for cutting screws and nuts are made by Goodnow & Wightman, 23 Cornhill, Boston, and may be had at most hardware stores; a set of these, properly cared for, will last a lifetime.

The Stilt.—The Darter, or Water-Turkey.

It often happens that American plants are first figured in European journals, and it is still more frequently the case that our birds and quadrupeds are better known abroad than at home. The resources of the Royal Zoological Society allow it to bring together animals from all parts of the world, and many rare American quadrupeds, reptiles, and birds are seen by Londoners at "the Zoo," that in this country can only be seen in their native haunts. The engraving above given is from the London Field; the artist, having the live birds as studies, is able to make a more life-like picture than can be produced from stuffed specimens—the models from which rare birds are often of necessity drawn. The smaller bird in the engraving is the Stilt, (*Himanoptus nigricollis*), which has, among other names, that of "Longshanks," the application of which is sufficiently obvious, though why it should also be called "Lawyer," is not so easy to see. This bird is found from New York southward, and also in the West Indies. It is black above, and its forehead, sides of head and neck, and under parts white; its bill is black, and its legs carmine. The legs of this bird are remarkably long, and, though the bill is long in proportion to the size of the head, it is short compared with the legs, and the neck being also short, the bird can with difficulty reach the ground to feed. But the structure is admirably adapted to the bird's mode of feeding, which is to wade in shallow water and take such insects and snails as it may find upon aquatic plants, or floating upon the surface of the water. The length of the Stilt, from the tip of the bill to the end of the tail, is 13 to 15 inches.—The larger bird is well known to all sportsmen who visit the southern states, especially Florida, as the "Water-Turkey" (*Plotus ahinga*); it is also called the "Darter," in some places it is the "Water-Crow," and, oddly enough, the "Grecian Lady." It is closely related to the cormorants, but more slightly built, and has a very long neck and small head. It is about three feet long; the color is a glossy greenish-black, with a broad gray band on the wings; there are also markings of ash, and in the female there is brown on the head and neck, and fawn on the breast. The bird has the habit of sitting motionless upon branches of trees overhanging the water, and when alarmed, it drops from the perch, head foremost, with its wings close to its sides, with astonishing velocity disappearing beneath the surface, making scarcely a ripple. It swims under water with great rapidity, and goes to a safe distance before re-appearing. Those who have watched the movements of the bird are astonished that so large a body can plunge so quietly. The bird very often swims with the body wholly submerged, the long neck only appearing above the surface, and looking so much like some kind of a water-serpent, that it has been called the "Snake-bird." When swimming upon the surface, they, when alarmed, sink quietly backwards, leaving the head only in sight. They are remarkably quick in all their movements, swimming with great rapidity, and have a strong flight, often going up out of sight. The food of the Darter is fish; it does not dive for its prey, as some birds do, but pursues and captures it under water. The number of fish it consumes must be very large. Audubon gives an account of a tame bird, seven months old, which swallowed in rapid succession nine fishes, each about 7½ inches long, and was accustomed to take at a single meal forty fishes, which were about 3½ inches long each. The Darter is easily domesticated, and it has been suggested that it might be trained to catch fish, in a manner similar to the cormorants in the East. The flesh of the bird is very oily, and of such bad flavor as not to be desirable as food. The nest, built sometimes in trees, but often on low bushes, a few feet above the water, is two feet in diameter, and constructed of sticks, leafy twigs,



THE STILT.—THE DARTER, OR WATER-TURKEY.—*Drawn and Engraved for the American Agriculturist.*

and the long or Spanish moss. The eggs, four in number, are coated with a chalky substance, which, upon being scraped away, shows the light-blue color of the shell beneath.

Walks and Talks on the Farm.—No. 139.

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It is now the middle of May, and a fire is quite comfortable. I never knew the land so dry. We have had some good showers, but no soaking rain. The underdrains have discharged little or no water this spring. The Deacon sowed some low land with wheat last fall, and I expected to see it drowned out; but he has as promising a piece of wheat as any in the neighborhood. This gives the old gentleman a cheerful countenance. I went to see Brother A., the other day. I have alluded to him several times. He is a capital farmer, and a true, noble man. He is always at work, but never seems to be in a hurry. He visits the sick, and relieves the poor, and neglects no religious or social duty. He keeps a bed in his barn, and many "a tramp" gets a free lodging there, and a breakfast in the morning. This has been his practice for forty years or more, and I believe no one has yet abused his kindness. He has seen more than three score years and ten, but is as active as a man of forty. We found him pruning his young apple orchard. When he set out this eight or ten acres of apple orchard twelve years ago, many thought he would never live to see the fruit. But he has had two or three fair crops, and a healthier and more promising orchard is not to be found in western New York. And is'nt he a happy man! His very face shines with health, and his cheerful greeting showed a contented spirit and a mind at ease. His life is a life of active enjoyment and peace. "How well your wheat is looking on the summer-fallow," I remarked, "it is the best piece of wheat I have seen this spring. Mine is wretched."—"Have you seen the wheat on the oat-stubble? It is almost as good."—Both these fields were in a sheltered situation, and he will have a capital crop of wheat.—"A man who has got a good crop of wheat this year," remarked the Squire, whose wheat is even worse than mine, "can afford to be cheerful. And besides he has a lot of the prettiest pigs in the neighborhood. And pigs this year are pigs. You can't buy a little pig a month old for less than $5.00, and some are asking $8.00 for a pig two months old—and will not take less."—"Mr. A.," I replied, "took the right course to get good pigs. He had a good thrifty common sow, and crossed her with a thoroughbred, and he has a litter of twelve pigs, with all the good points of their thoroughbred sire, fine bone, quiet disposition, small head and ears, square backs, deep sides, good hams and shoulders; and united with these, they have the health, vigor, and hardiness of the mother. Such pigs have good appetites and good digestion, and will grow rapidly, fatten at any age, are easy keepers, and afford meat of the best quality."

It is raining—and raining hard. It will do much good; but it is too late to be of much benefit to our winter wheat. Much of this is injured beyond recovery. We shall not feed wheat to our stock next winter. A letter just received from Iowa, says; "Fall wheat entirely winter killed." And I fear the evil is general. I hope we shall have a big corn crop. With the present and prospective high price of pork, a good corn crop would be a national blessing. Owing to the long continued drouth, the soil turns up beautifully, and corn as a rule, will be planted in fine, mellow soil. This is an important matter. If corn gets a good start, the chances are greatly in its favor. Let us cultivate thoroughly, and keep the land clean and mellow between the rows, and then we may hope for a good crop.

It is twenty five years this spring since I put in my first crop of Indian corn on this farm. Our method of planting, cultivating, hoeing, hilling, cutting up, stooking, husking, and shelling, is essentially the same now as then. I question if the Deacon has changed his method in any particular, and the same is true of the Judge, Brother A., and other good old-fashioned farmers. A few of us drill in our corn, and harrow it with a smoothing harrow; but I find a constant tendency to drift back into the old plan. It will take another quarter century, and another generation of farmers, to effect any radical and permanent change. We want a new implement for preparing sod land for corn. We plant our corn in rows 3½ to 4 feet apart, and as soon as the corn is up, we cultivate between the rows again and again. This land between the rows gets thoroughly worked; but how is it under the hill or row of corn? All the stirring and cultivating, and pulverizing, and mellowing, which this small space gets, must be done in the short and hurrying time before planting, when all the spring work on the farm is pressing us at once. And whatever we do for this small space of soil, where the seed is to be planted, must be done for the whole surface of the land in the field. We have to prepare the whole land for corn, with drill rows 42 to 48 inches apart, as completely as we do for wheat, barley, or oats, with drill rows only 7 or 8 inches apart.

Corn delights in a warm, mellow, well pulverized soil. Our naturally loose, warm, sandy upland soils, are apt to be poor, and need manure; while the richer and heavier loams, where we ought to get a good crop, are with great difficulty got into the proper condition for planting corn. And such will be the case so long as we attempt to work the whole of the land before planting. We must have an implement for working the soil where the corn is to be drilled or planted, and let the rest go until we cultivate.

H. E. Hooker was here to-day. I was feeling "blue" about the poor prospects for wheat, and not less so in regard to a 22-acre field of clover, that is more than half winter killed. Along the sides of the fences for two or three rods wide, the clover is as thick and luxuriant as could be desired; and also on the west side of the dead-furrows, and the east side of the ridges, and wherever the snow protected the plants from the wind. The field was seeded down with clover last spring, half of it on winter wheat, and the other half on spring barley. The part seeded with the barley, is far better than that put in with the wheat, but neither are half as good as I expected, except where the snow protected the plants. I thought I had a right to hope for a great crop of clover. I had taken great pains in draining, preparing and cleaning the land. The Squire has a field near by seeded at the same time. Last fall my clover looked so clean and nice, and his so full of weeds, that I fear I contemplated the difference with satisfaction. But now my clover is half dead while his is green and flourishing. The weeds and rubbish protected the young plants. I have noticed several cases where wheat stubble was left high, that the clover seems better than where it was cut close.

"Now," said Mr. Hooker, "if you will plow up a few acres of this land where the clover is most injured, and drill in three bushels of corn per acre, in rows 3 to 3½ feet apart, and cultivate thoroughly as long as you can yet through with a horse, you will not regret the loss of the clover."

Mr. Hooker has raised corn-fodder for years, and with such great satisfaction that he is quite enthusiastic in regard to it. He thinks it the great American fallow crop. Not only does it afford a great yield per acre, but it occupies the land only a short time, and leaves it perfectly clean and in good condition for future crops. He says he can kill even quack grass with a crop of well cultivated fodder corn. Like nearly all others who have tried both plans, he recommends sowing in rows wide enough to admit the free use of the cultivator. He regards frequent cultivation between the rows as the vital point. Sometimes the wind will blow down a piece of such corn, when sown in rows, but if left alone, the crop will still mature, and not be seriously injured.

Mr. Hooker makes the rows 3½ feet apart, with a swivel plow, and then scatters the corn in the row by hand, at the rate of three bushels per acre. "If he had told us how long a row a quart of corn would sow," said the Deacon, "we could tell better whether we were getting it on thick enough."—That is easily figured. With rows 3½ feet apart, a row 4,148 yards long, would be an acre. And so at the rate of 3 bushels per acre, a quart of corn would sow a row 43 yards long. I have sown 4 bushels per acre, and found it none too thick. At this rate a quart of corn would sow, at 3½ feet apart, a row not quite 32½ yards long. Or say half a pint of corn to 8 yards. I find, on trial, that I can fill a half pint measure with two handfuls of oats; but it took six handfuls of Champion of England peas, or five handfuls of corn. I got one of my men to try it, and he filled the half pint with four handfuls of corn. I think about one good handful of corn to two yards of row, would be about the right quantity to sow.

Mr. Hooker sows it at different times, from the middle or last of May, to the first week in July, whenever he can get the land ready. "Sow enough of it," he said, "so that you can use it freely. It has no enemies. Will produce at least 5 tons of good cured fodder per acre. And the whole crop can be used to advantage."—"But do you not have trouble in curing it?"—"Not at all," he replied. "We make it into large stooks in the field, bind it round the top, and let it stay in the field and draw it to the barn in winter as it is wanted."

"With good corn-fodder, mixed with a little mill feed and corn-meal," said Mr. H., "we make nearly as good butter in winter, as when the cows are out at pasture. And last winter I kept sixteen horses on corn-fodder, and never had horses do better. Eight of these horses were turned out in the yard, with a shed to run in, and had nothing but corn-fodder, and they got fat. The other eight, which were worked regularly, had mill-feed and meal mixed with the chopped corn-fodder, and they also kept in high condition. They have not had a particle of hay."

"J. G. C." sends me a newspaper containing an article on "Perfect Manuring," and writes that he wishes "Walks and Talks could give us light on the subject."—I wish so, too. With our present knowledge, it is safe to say that the wisest general course is to drain the land where needed, to keep it clean, to raise as much horse, cattle, sheep, and pig food as we possibly can with profit, and feed it out on the farm, taking care to save the manure from running away, or from leaching. Then, if we buy artificial fertilizers, to use in addition to the manure made on the farm, we should select those that give us nitrogen and phosphoric acid, (and perhaps potash), at the cheapest rates and most available form. And we need not trouble ourselves about getting other ingredients of plant food.

If, instead of buying artificial manures, we buy food to feed out with the fodder raised on the farm, our aim, so far as the value of the manure is concerned, should be to select those which, other things being equal, furnish the most nitrogen. The able articles from the pen of Prof. Atwater, which have appeared, and which I hope will be continued in the *Agriculturist*, should be carefully studied in this connection. Prof. Atwater shows very conclusively the advantage of growing or buying food rich in nitrogen, (albuminoids), to feed in connection with straw, corn fodder, etc. This has been my aim for years. But I have selected food rich in nitrogen for the sake of getting rich manure. There is no doubt on this point. The richer the food in nitrogen, the richer and more valuable will be the manure. I have tried to grow as much clover and peas as possible, because these foods are rich in nitrogen. I have bought bran, and malt sprouts, for the same reason. Prof. Atwater confirms this view; but he goes far beyond me. And I hope he is right. He seems to think that foods rich in nitrogen are not only more valuable for manure, but that they are also more valuable directly or indirectly for food also. I hope he will give us more information on this point. I have been acting on a different theory, and if Prof. Atwater is right, I could save some hundreds of dollars every year.

What I want to be satisfied about is this: I feed my sheep all the straw and corn fodder they will eat. But it is not rich enough to make them grow, or fatten them as rapidly as I wish. Now, what shall I give in addition? As I understand Prof. A., he says give them food rich in nitrogen. Now, if nitrogen is what I want—and if, by furnishing this, I can get sufficient available carbonaceous matter from straw and corn fodder, then I can feed much more economically than I am now doing. But I have my doubts. Will Prof. Atwater tell me whether it has been really proved by actual experiments, that in such a case as I mention, peas or beans are much more valuable than Indian corn? If nitrogen, and nitrogen alone, is what I want, (the sheep having all the straw and corn-fodder they will eat), then 100 lbs. of beans, peas, or malt sprouts, should be worth nearly as much as 200 lbs. of corn. And a ton of bran would be worth as much as a ton of corn-meal.

We have just been dipping the lambs. We finished shearing last week, and as usual the ticks from the sheared ewes soon got on to the lambs. I only dipped my ewes once last summer. They apparently were so free from ticks that we did not dip them last fall. I suppose this is the reason why we had so many ticks on the young lambs this spring. I took two gallons of soft-soap, about six lbs. of grease, half a lb. of white hellebore, and one quart of crude carbolic acid, and boiled the whole

TROUGH FOR DIPPING SHEEP.

together for half an hour in eight pailfuls, (say 18 gallons), of water, until the grease was all dissolved and thoroughly mixed with the water. To this we added six pailfuls of cold water, or sufficient to reduce the temperature of the dip to about blood-heat. I have a two-inch plank watering-trough, 10 feet long, 2 feet wide, and 16 inches deep, with a partition in the center.

We put the fourteen pailfuls of liquid into the trough, and raised one end of the trough, until the liquid was within a few inches of the top at the other end, and put blocks under to hold it in this position. I have used this trough for dipping lambs and sheep for some years, but have always used more liquid, and never before thought of the plan of lifting up one end of the trough. It worked admirably. We had sixty lambs to dip, many of them nearly as large as common Merino sheep. We dipped the largest first. When we got through, there was only about five pailfuls of the liquid left, but as the lambs were smaller, there was nearly enough to cover them, and by turning them over in the liquid, every part of the body, except the head, was immersed.

One man caught the lambs, and two dipped them, and I stood by and held the lamb by the nose, so as to be sure that none of the liquid got into his mouth or nostrils. It took a little over one hour to dip the sixty lambs. Every tick seemed to be almost instantly killed. An hour afterward we examined several of the lambs. We found hundreds of dead ticks, but not a single live one. I never had a dip so entirely satisfactory and effectual. None of the lambs showed any symptoms of sickness, and the next morning they were frisking about as happy as before the ewes were sheared.—"You have omitted one or two points," said the Deacon. "You put the hind-quarters of the lamb in the deep water, and the head in the shallow water toward the center of the trough. Then, after the lamb had been in the water about 20 seconds, you lifted him out, and let him stand in the upward part of the trough, and there pressed the liquid out of the wool, and let it run back through a hole in the partition. I never saw you have anything so well arranged before, I certainly never saw ticks so easily and so surely killed."—"Good for you, Deacon," said I, "and suppose I tell them what a mistake you made about the quantity of liquid we should need." The Deacon said we should not have half liquid enough, as "this *long wool* will hold a great deal of water."—We found it was precisely the other way. The grade-lambs, and especially those with only one cross of Cotswold blood, had shorter, thicker, and finer wool, and we were all astonished at the great amount of water which the fleeces of these lambs held—on the principle, I suppose, that a fine sponge holds more water than a coarse one. It shows that if a fine-wooled lamb should get soaked through to the skin in a heavy rain, the fleece would not dry so soon, after the rain is over, as a long-wooled lamb.

Yesterday a farmer was driving past towards the city, on a large load of bright, well cured clover hay. I asked him how much he had on, and what he would take for the load. "There is all of twenty-seven hundred," he said.—"It takes a big load to make a ton," I replied, "and I do not think you have much, if any, over a ton, and if you like to drive it into the barn, I will give you $10 for it."—He scowled at me, and drove on toward the city. This was about nine o'clock in the morning. Towards night I saw a load of hay drive up from the city. It was my friend of the morning. He had been in the city all day with that load of clover-hay.—"I could not get a single offer for it," he said, "Timothy sells readily for $15 to $16 per ton, but nobody wants clover."—He had 2,160 pounds in the load, and was glad to take my offer of the morning, not that he wanted money, as he is a well-to-do farmer, but he evidently did not want to have his neighbors see him come back with a load of hay. I could not but feel sympathy for him, and took in the hay. He lives 15 miles from the city, and had spent a long day, with a team, at this busy season, taking a thirty-mile ride, to sell a load of hay for about what it is worth for manure. And we send millions of dollars out of the country every year to buy wool, and all my city friends complain of the high price of meat, and of the difficulty of getting *good* beef, mutton, veal, and lamb.

More Education among Farmers.

It is a fact shown before the British Parliament, that "while the rental of land in Ireland had doubled during the previous hundred years, and that of England tripled, the rental of Scotland had sextupled itself in the same time." This is attributed mainly to the vastly superior school system which Scotland has possessed, and the skill and enterprise it has fostered among the people.—It is a fact that a truck-farmer within a dozen miles of any of our large cities, will get a clean profit of two or three hundred dollars from an acre of land, while the average old-style farmer, hardly gets that amount of profit from his hundred acres or more. These facts are worth studying by the still large class who do not see the use of agricultural papers and teaching, etc., think muscle is the main thing in successful farming. The truck-farmer studies his market, knows what is wanted, learns how to raise it, when and where to sell it, believes in manure, buys it, believes in knowing all about his business, takes his paper, reads and thinks, don't kick at facts because they are printed, keeps his eyes open, and drinks in knowledge from men and books. He keeps learning and succeeds in his business. There is still a large class of our farming population completely stereotyped. Many take no agricultural paper, attend no fairs, no farmer's club, try no experiments, have no faith in improved tools and stock, and are hardly able to tell at the end of the year whether they lose or gain in their business. Success in cultivating the soil is already, and is to be more and more, dependent upon brains. Men who read and think most, plan most wisely and execute most skillfully, will succeed best. We need all the help we can get from the teachings of science, from journals, from fairs and clubs, as well as from the daily experience of the fields.

An English Donkey Show.—An exhibition of working donkeys was held in the Crystal Palace, near London, in May, at which a large number of animals were entered. The donkeys were chiefly owned by "costermongers," or, as we call them, pedlers and junk dealers, and the exhibition was started by the Society for the Prevention of Cruelty to Animals, for the purpose of influencing these persons to a more humane treatment of their donkeys. The result has been to greatly raise these humble animals in the estimation of their owners and the public by showing how much more hardy, docile, industrious, and useful they are than is generally supposed. Some of these diminutive animals draw a ton at a load 20 miles a day for their usual labor; others draw three such loads a day eight miles, "going eight miles an hour without a whip." "Old Tommy," now 24 years old, has drawn three tons of coal daily for the past 16 years, and needs no whip; "Wild Charley" is 21 years old, and is in the old iron business; he has won 21 matches and can trot two miles in 7 minutes. "Old Tommy" is valued at $150, and "Wild Charley" is not for sale. "Young Tommy" has trotted 8 miles in 50 minutes. "Coster Jack" is in the egg and fruit business, and travels 22 miles every day, although only 4 years old. Jack is "fond of children, and eats bread from a plate and drinks tea from a saucer on the table like a rational being"; this accomplishment being set forth by his owner on his entry in the catalogue. The amount of work done by donkeys in England is beyond belief by those who are unacquainted with them, and the value set upon them by their owners is higher than would be supposed. Those mentioned in the catalogue as work animals are valued at from $30 to $250. Certainly, a good donkey is very much better than a poor, lame horse for the work for which these animals are adapted.

Summer Care of Poultry.—Lice are the bane of poultry in the summer season. Young chicks and old fowls pine and die miserably in thousands from this cause. Grease is a sure remedy against these vermin. A mixture of one teaspoonful of kerosene oil or crude petroleum, with 4 ounces of fresh lard or sweet oil, should be rubbed on the heads and beneath the wings of the fowls and chicks, either as a cure or preventive. The same should be smeared over the roosting poles, carefully filling all cracks with it. If a setting hen is allowed to become infested, her nest should be changed, the eggs dipped in tepid water and washed, and replaced in a fresh clean nest. There is no better material for nests than fine earth or shavings. Some tansy placed in the nest, will help to keep lice away. The hen may be washed in warm carbolic soap suds, and then allowed to dust herself in fine, dry, clean earth. The new nest should be exactly similar to the old one, and if the change is made when the hen leaves the nest to feed, and near the evening, she will go on to it without hesitation. Cleanliness, dryness, variety of food, and pure water in plenty, will all help to keep poultry in perfect health during the warm weather.

Granaries and Grain Bins.

As a rule it will be found most profitable to thrash grain as soon as it has been harvested. There is a saving of time and labor in drawing the sheaves from the field direct to the thrashing machine, and mowing away the straw in the barn at once. The thrashing may be done in the field, and the straw stacked there, especially now that steam-thrashers are coming into more frequent use. When this plan becomes general, the granary will become as conspicuous a farm-building as the barn

now is. For storing the crops, it will be substituted to a great extent for the barn, and instead of the barn being a storehouse, it will be only a place for lodging and feeding the stock. Hay and straw may be stacked, and grain kept in a granary, more cheaply than they can be stored in barns, and the stables and stackyard will then replace our present cumbersome and costly combined stables and barns.

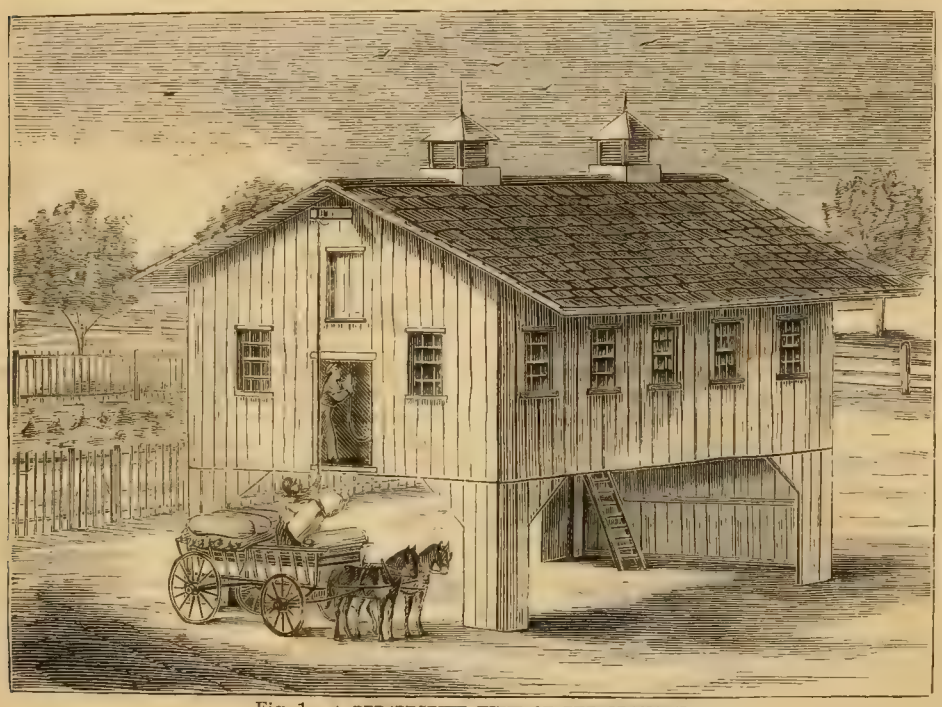


Fig. 1.—A PERSPECTIVE VIEW OF THE GRANARY.

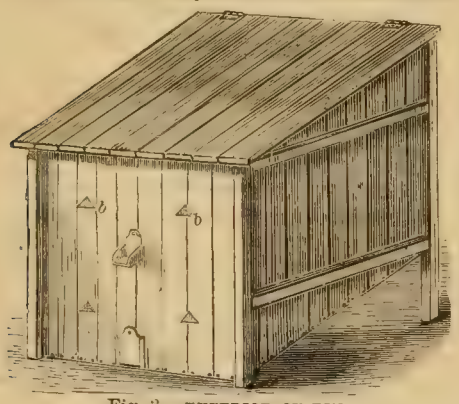


Fig. 3.—EXTERIOR OF BIN.

When grain is thrashed directly from the field, and is stored in bulk, it goes through a process of sweating, and if not turned or ventilated, is liable to heat and spoil. It is a work of considerable labor to turn the grain, or move it from one bin to another. A granary, with ventilating bins, as here illustrated and described, saves this labor. The granary is shown at figure 1. That it may not be accessible to rats and mice, it is made two stories in hight, the lower one is used as an open shed for storage of wagons and implements, or for a workshop. Access to the granary is gained by an open stairway, which, if thought proper, may be hinged at the top, and slung up when not in use. The engraving represents a building 24 feet long, 20 feet wide, and 21 feet high. The shed is 9 feet high, the granary 8 feet, and the loft for the storage of corn is 4 feet to the eaves, and if the roof is one-third pitch, it is 11 feet high at the center. The frame is of heavy timber, to support the weight. The posts may be mortised into sills bedded in concrete or lime mortar, to preserve them below the level of the ground, or the sills may be on stone underpinning. The posts should be 12 inches square, the studs 4×12, and the frame well braced with girts. The floors should be of 1½ inch plank, and be supported by beams of 10×3 timber, placed at most 16 inches apart. The building may be covered with patent siding, which fits closely to the studs, or boards and battens, and is not lined inside, so that there is no hiding place for vermin. There is a wheel-hoist (like that described in the *American Agriculturist* for March, 1873, page 97) in the loft, by which bags of grain are elevated from the wagons by a rope, at the end of which is a loop or sling, made by a piece of wood, with a hole at each end, through which the rope passes, shown at fig. 2. The bag of grain is put in this loop to be hoisted.

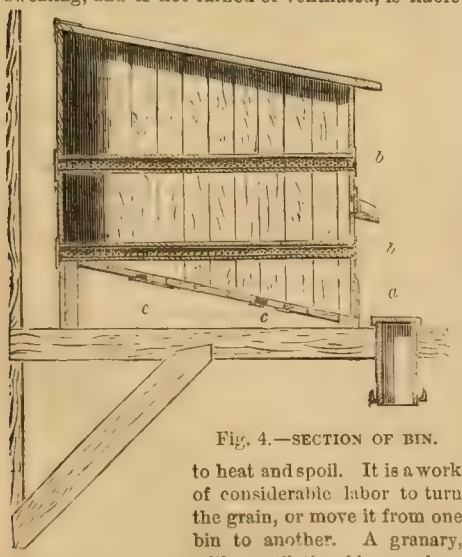


Fig. 4.—SECTION OF BIN.

The bins are made with a substantial frame of 2×4 timber, mortised together, and boarded with matched inch boards inside of the frame. The bottom is made sloping, and is raised above the floor, so that the floor can be washed or swept when needed. This cleanliness will prevent the harboring of weevils and other vermin. The form of the bins is shown at fig. 3. There is a slide at the bottom, by raising which the grain may be let out on to the floor, and shoveled into bags, or through the spout seen at *a*, in figure 4, into bags in the wagon in the shed below. A spout in the front also enables a portion of the grain to be run into bags without shoveling, and if thought advisable, a spout may be carried through the floor from each of the slide-doors, with very little expense. The spouts are provided with hooks at the bottom, upon which cloth-guides, seen at *a*, *a*, fig. 6, are hung, to direct the grain into the bags. A space is left sufficient to allow a boy to go behind the bins and sweep the floor and walls, and there is a space of at least 4 feet in the middle of the granary between the rows of bins. The bins may be made of any desired size, and separate from each other, or in one continuous bin, divided by movable partitions. Every care should be taken to have no cracks or crevices in the bins, floors, or building, in which weevils can hide, and the windows should be covered with fine wire-gauze, and the ventilators in the roof also covered to prevent the entrance of the grain-moth, (*Tinea granella*), the parent of the grub which glues the grains of wheat, oats, or barley together, to form a nest, and which flies abroad from May to September, as well as the beetle, (*Sitophilus granarius*,) the parent of the well known weevil which eats out the heart of the grain, leaving nothing but the husks. In such a granary as here described, with care in keeping the cracks filled with lime-wash, and in sweeping out dust and rubbish, grain may be kept without any damage whatever from these and other pests.

Fig. 2. SLING.

To provide against injury from heating, the ventilators shown at fig. 5, and at *b*, *b*, figs. 3 and 4, are provided. These are strips of half-inch wood nailed together, so as to form angular troughs about six inches wide. The sides are bored full of small holes, that will not permit the grain to pass through them, and the ends are covered with fine wire-gauze. They are fitted into the bins, running from front to back, with the open side downwards. When the grain is poured into the bins, vacant spaces are left beneath these ventilators, and if it heats, the moist warm air escapes through them. Small pieces of wire-gauze are also fastened over holes in the bottom of the bins, as shown at *c*, *c*, fig. 4, through which cool air enters the bin, as the heated air escapes above. In this way the grain is cooled and aërated. Even buckwheat, which when newly thrashed, heats so readily as to be troublesome in damp warm weather, may be kept in perfect order in such a bin as this, without trouble.

A section through the center of the building given at fig. 6, shows the position of the bins and the passages. A granary 24 feet long, with bins 6 feet wide, and 5 feet deep, will hold about 1,200 bushels of grain on the first floor, but a large amount in addition can be stored upon the second floor in heaps or bins. If more room is needed for the grain, a great many filled bags can be piled upon the bins; so that in case of necessity, 2,500 bushels can be stored in a granary of this size.

Fig. 5.—VENTILATOR.

CLEAN STABLES.—A clean and wholesome stable is a great comfort to a horse during the hot weather. The stifling, poisonous atmosphere in which some farm horses pass the night, after a hard day's work in the field, is productive of unrest and ill-health. Flies abound in such stables, and those savage pests, which are by many mistaken for

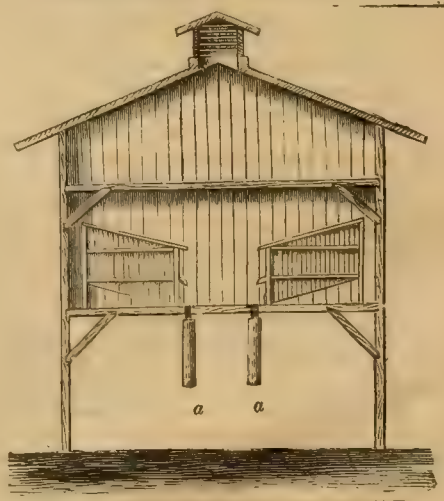


Fig. 6.—SECTION THROUGH THE GRANARY.

house flies, are a different and bloodthirsty species, *Stomoxys calcitrans*; so called from its persecutions, causing horses to kick incessantly. These prevent both the horse and its humane owner from resting with comfort. Frequent washing of the floor with water, clean bedding of pine sawdust or dry earth, and permitting the horses to void their urine before they enter their stable, will go far to keep the animals comfortable. In some stables, when the horses come in from work, and after watering, they are led to the manure pile, where they at once void their urine, and thus keep the stable clean. They are led there again early in the morning, and soon become habituated to the practice. If this was generally done, the stable would be less disagreeable than it now is, and the farm-house would not be pervaded with its odor after every visit to it.

Shingling Gauge.

Our correspondent "L. D. S.," sends a description of a very useful gauge for marking the lines in shingling a roof. Fig. 1 shows the method of using it. At *a*, is a long, straight edged board, an inch thick, three inches wide, and the length

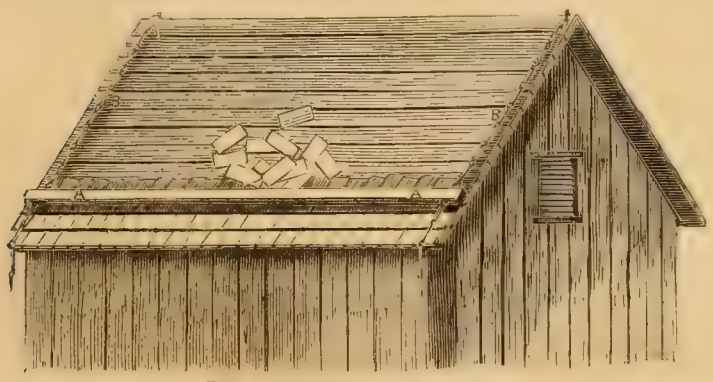


Fig. 1.—THE USE OF THE GAUGE.

of roof, if not over 16 or 18 feet. If of greater length, one-half of it, or a convenient portion of it may be shingled at one time, and the gauge then moved further on to cover the rest. *B*, *B*, are well oiled hemp cords, with knots tied at intervals of six inches along its entire length. One end of this rope is fastened to a nail or spike driven into the roof near the ridge. In fig. 2 is shown the manner of using the cords. Tapering slots are made in the strip, *A*, through which the cords *B*, *B*, are inserted and retained in position by the knots, when drawn well into the diminishing point, as shown in the figure. No chalk line needs to be made; the continual jarring of the roof by driving nails, does not cause the loose shingles to slip beyond reach; neither is the nail box liable to slide, as it can always rest securely against the edge of gauge; in laying the shingles they are always kept in line, and do not need to be held down with one hand while a nail is held with the other, for the gauge strip, *A*, does it all. When a course is laid, it takes but an instant to move the gauge one knot (or course) higher at each end. The lines, *B*, *B*, are attached so that the edge of the strip, *A*, will register at the points desired, and the roof is all completely marked off before a shingle is laid.

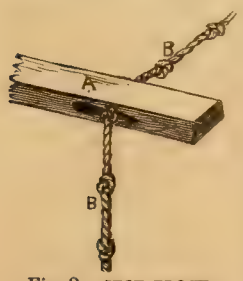
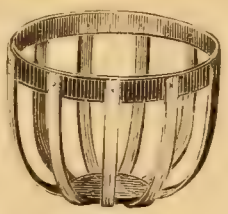


Fig. 2.—STOP BLOCK.

A Muzzle for Biting Horses.

It is not nearly so easy to cure a horse of the habit of biting, as it is to prevent it. This dangerous habit is taught by thoughtless owners or drivers, by teasing the animal when full-grown, or by playing with it when it is a colt. Sometimes it may be cured by giving the horse a smart cut with a switch, across the muzzle, when he attempts it. For incurably, tricky, or vicious horses, there is no remedy but muzzling them. The muzzles may be made of leather, or of strips of light hoop iron. A band of leather is made to encircle the muzzle, and to this are attached straps by which it is buckled to the headstall; the leather or iron strips are riveted with ordinary copper rivets. The strips are about 9 inches long, and are riveted at the bottom, where the ends meet, on to a round piece of leather two or three inches in diameter. The muzzle is shown in the accompanying engraving. When the horse is fed, the muzzle must be removed. This muzzle will meet the difficulty experienced by several of our readers, who have asked for a remedy for this dangerous vice.

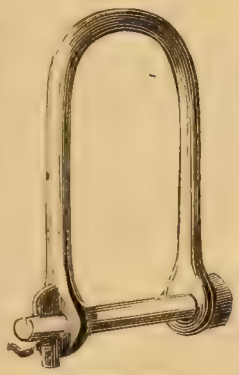


MUZZLE.

WASTES. — In many manufacturing establishments a fair profit is made merely by preventing or utilizing wastes. The difference between profit and loss, consists mainly in the exercise of rigid economy, in this way, of both time and material. These matters are scarcely studied on the farm. If a horse has a habit of throwing his food out of the manger, it is supposed that the chickens will pick it out of the manure, but what is left in the morning, after the rats have helped themselves during the night, amounts to but very little, if any. Scores of such little matters abound all over the farm. Mice in the granary and mows, and rats in the crib; lice on the cattle and poultry, and ticks on the sheep; hay cut a little late; weeds suffered to grow a little too long; a little break left until it becomes a costly one; working with dull tools; being a little behind hand in everything; all these, and many more, amount in the aggregate to a loss which, if saved, would be in themselves a fair profit. The general unthrift that accompanies this habit of waste, discourages the children, and they hope for the time when they can escape and do better somewhere else. It is thus in nearly all those cases where we hear that farming, really the best business possible, does not pay, and no man can long carry on a business that is not profitable without discouragement and disgust.

A Clevis Key.

"L. D. S.," Yates Co., N. Y., gives the accompanying sketch of a key for the small clevis used to connect the plow to the whiffletree ring. It is an iron key with a shoulder upon its lower edge, and a small hole in which is inserted a piece of round leather, as is shown in the engraving.—By this plan the clevis is kept from spreading, and is not liable to be lost; it is a most desirable way to fasten all keyed bolts.—By placing the keyed end of the bolt up, the key can be seen at a glance.



CLEVIS KEY.

Locusts, Grasshoppers.—Mr. Riley's Report.

Last autumn the whole country was shocked at learning the destitution caused in Kansas, Nebraska, and other western states, by the visitation of a plague of Locusts or Grasshoppers equal to that of Egypt. Prosperous families were brought to the verge of starvation, and though aid was

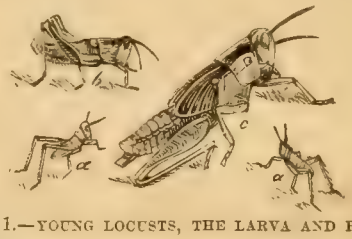


Fig. 1.—YOUNG LOCUSTS, THE LARVA AND PUPA.

given in large sums, there was great distress and suffering. This spring there are accounts of the appearance of these insects from the eggs deposited by the devastating hordes which came last year, and great anxiety is felt as to the immediate future of the localities visited last year, and fears are entertained lest the insect has provided a stock which will migrate still further eastward, and repeat in the Valley of the Mississippi, the devastations of which last year Kansas and Nebraska were the scenes. Last year there was a talk in Missouri of abolishing the office of State Entomologist. It was much regretted that a state which had been so far in advance of all others in this matter, should propose a backward step, but fortunately better counsels prevailed, and we have in the Seventh Report of Prof. C. V. Riley, a very full and interesting history of the Rocky Mountain Locust. The report is not of so much value because it tells how to avoid the visitations of the insect, or how to destroy it when it comes, as these are impossibilities, but it gives all that is known of its habits and its occurrence in former years, suggestions as to remedies, and descriptions of its natural enemies,

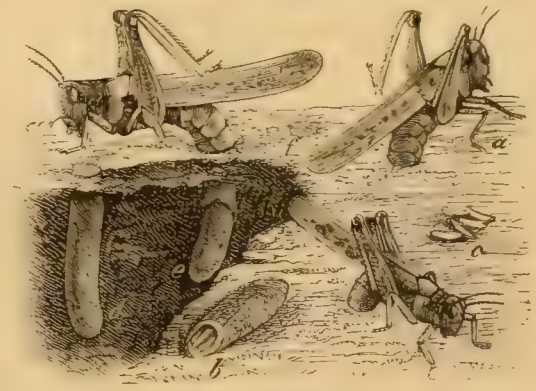


Fig. 2.—LOCUSTS DEPOSITING THEIR EGGS.

all illustrated with engravings and maps of the devastated regions. An unknown enemy is more to be feared than one with whose strength and whose weapons and tactics we are familiar, and the assurance which this report gives to the people of Missouri, that should another invasion take place, it will not, reasoning from the past, extend easterly beyond a certain line, and the further assurance that there is no probability that the insect can permanently establish itself in the state, is worth more to the people of the commonwealth, than the expense of maintaining a score of entomologists, and it is hardly likely that we shall hear any more of abolishing the office filled with such eminent ability by Mr. Riley. The great invasion of last year, is regarded as being in part by insects hatched in their proper home in the mountain valleys of Colorado, and the neighboring territories, and in part by those hatched further east, the progeny of a less extended invasion in 1873. The injury caused this year by locusts, so far as we have seen, is reported as due to those hatched from the eggs deposited last year. We have not space to give even a full synopsis of Mr. Riley's report, but we present a few points of present interest. The eggs are preferably laid in

high, dry, sandy places, in tolerably compact soil, and we here reproduce, in figure 2, Mr. Riley's illustration of the operation of depositing them. The tail end of the female insect *a*, *a*, is furnished with two pairs of horny valves, with which, from their peculiar structure, she is able to drill a hole in a few minutes, deep enough to bury the whole abdomen, the tip of which reaches an inch or more below the surface. When the hole is finished, she deposits the eggs, which are enveloped in a glutinous fluid, which holds them together in a long cylindrical pod, *b*, which is covered with adhering particles of earth. There are from 30 to 100 eggs laid side by side in the mass, each, *c*, about 0.15 to 0.20 inches long, pale yellow, and slightly curved. The engraving shows the female ovipositing in three different positions; *d*, a complete egg-pod, *e*, one being placed, and *f* shows where one is finished and covered up. The eggs remain in the earth until spring, when the young hatch and appear on the surface. Figure 1 shows the young in various stages, *a*, *a*, are newly hatched larvæ, *b*, the full grown larvæ, *c*, the pupa, which in these insects is active, and from which it changes to the perfect insect, with fully developed wings, the whole from the hatching to the perfect state requiring about two months. The belief that those hatched away from their native country will not progress still farther eastward, is founded upon their previous history, and the idea that the insects so produced are not healthy, and do not breed. Several pages of the report are devoted to the natural enemies of the Locust, among which, besides the birds, are numerous insects: a mite attacks its eggs; another mite attaches itself to the insect; a Tachina-fly deposits its egg within the body of the locust, the resulting maggot from which destroys its host; the common Flesh-fly destroys a share of the feeble ones. Before such myriads of locusts, when they descend upon a neighborhood, man is powerless; the advent is so sudden, and the mischief is done with such rapidity, that nothing will prevail against them; but several remedies, or rather preventives are proposed, for use against those hatched from the eggs left by the horde. Deep plowing in the fall will turn the eggs under so far that but few will hatch. Where irrigation is practicable, flooding the ground for a few days will destroy the vitality of the eggs. To destroy the young, wingless locusts, the use of the roller is advised; they may be driven into windrows of straw, which is then set fire to, and the insects thus destroyed; as the insects, when young, cannot fly, they may be driven by beating with brush, and when the advance guard is started in the desired direction, the rest follow; in this manner they are driven into ditches, caught in sacks and killed; they may be killed with a broad wooden shovel, attached to the handle at a proper angle. The young locusts do not like a loose surface, and keeping the soil loose by cultivation will do much to keep them away from the crops. The winged insects avoid smoke, and special trees and small tracts have been saved by keeping up a continuous smudge. Mr. Riley makes one suggestion which he will find few to adopt. The locusts eat up the food of the people, then let the people eat the locusts—he does not put it in that language, but he does suggest that in a time of scarcity and famine, locusts might be used as food. It is well known that a cake made of pounded locusts, or "grasshopper gingerbread," as one traveler calls it, is a favorite food with the Digger Indians, and whites might do much worse than try it. Mr. Riley's Report is exceedingly creditable to himself and the state, and we hope provision has been made that so valuable a document may be procured by all who desire to possess it.

SHORT-HORNS FOR THE DAIRY.—The very common idea that Short-horn cows are useless for the dairy is a wrong one. The breeding of Short-horns for beef has, to a great extent, caused their value for the dairy to be lost sight of. Originally these were the best dairy cows, and the first Duchess gave during the summer, while on pasture only, 14 quarts of milk at each milking, and each milking yielded 21 ounces of butter. The value of her produce was then two guineas, or $10.50 a week. Chas. Collings' cows were heavy milkers, one gave 26½ quarts at a milking; another cow gave 19½ quarts at one milking, and a cow by the "Masterman bull" gave 36 quarts of milk a day. Mr. Wastell, one of the original Short-horn breeders, had a cow that gave 36 quarts of milk a day, and 24 lbs. of butter a week. These cases were all reported by the well known Mr. Bates, the breeder of the Duchesses. One of the heaviest milkers now living, is a cross-bred Short-horn and Ayrshire cow, which has given 100 lbs. of milk per day. It is an injustice to this valuable breed that their milking properties should be lost sight of in the endeavor to produce a symmetrical carcass, which may add a little to their value as beef-producers only.

The Buffalo Gnat.

The papers have contained accounts of serious losses of mules and horses in some of the western states from the attacks of the Buffalo Gnat. Some of these stories have probably been exaggerated, but the injury has no doubt been considerable, and sufficient to cause alarm among owners of animals, and to awaken a desire to know something of the insect and its ways. Those who have visited densely wooded regions on surveys and explorations, or have gone to the Adirondacs, the backwoods of Maine, or any other wilderness countries, for hunting or fishing, have no doubt made the acquaintance of the "black fly," a very small insect, which comes in clouds, and each individual as pernicious as a dozen mosquitos in one. The little fellow draws blood every time it strikes, and it, or some other one, strikes so often, that the writer has actually had the blood trickle down his face from their numerous wounds. This is *Simulum molestum*, of which fig. 1 is a much magnified representation, and it has been stated that the Buffalo Gnat is the same insect; but our correspondent, Mr. C. V. Riley, State Entomologist of Missouri, informs us that there are several closely related species, which are popularly called Buffalo Gnat, and that the insect so called in Missouri and Texas, is a species of Simulum as yet undescribed, but the points in which it differs from the common Black-fly are such as would be noticed by an entomologist only, and so far as their habits and changes are concerned, they may be regarded as essentially the same. It has been suggested that the Buffalo Gnat is the same as the "Tsetze," the fly which is so destructive to cattle in Africa, but that belongs to a quite different genus. In Hungary a similar fly is known as the "Gnat of Columbatz," as it has been especially troublesome near a castle of that name; the animals are attacked by them in such numbers, penetrating every orifice of the body, and even entering the lungs, that they are generally killed by the severity of the inflammation thus caused. The European fly is especially abundant in some particular years, and apparently the one in this country comes in great numbers only periodically. As to preventing their attacks, it is probable nothing can be done, other than to shut up the animals where the insects can not reach them; while we have seen no detailed accounts of the matter, we suppose that the insect is not noticed until the mischief is done. These insects pass their larval state in the water, and are then as unlike the perfect insect, as can be imagined. The accompanying engraving, (fig. 2,) from the "American Entomologist" of 1869, (since then suspended to the regret of all naturalists,) shows the insect in its early life. The larva, *a*, is about a third of an inch (0.35) long, and the other figures are enlarged in proportion; at its upper end, near the mouth, it has two singular fan-shaped appendages, which, it is supposed, are of service in procuring food. Figures *b*, *c*, and *d*, give the back, front, and side view of the pupa. The larva (*a*) is often found in an upright position, attached to stones and other objects by its lower end; it is capable of swimming by means of a jerking motion, and of walking by doubling itself up and straightening again. When ready to undergo its changes, the larva spins a silky thread, and forms a pouch attached to a leaf or stone, in which it hangs as at *c*, until ready to emerge as the perfect insect. The larva is able to spin a thread during its active state, and uses it to attach itself to plants and other objects in the water; on this account it has been charged by some fish culturists as being destructive to young trout, and it has been called the "Death-web" of the trout; on the other hand it is claimed that the larva can be of no possible injury to the fish, but on the contrary, furnishes it with valuable food.

Fig. 1.—GNAT.

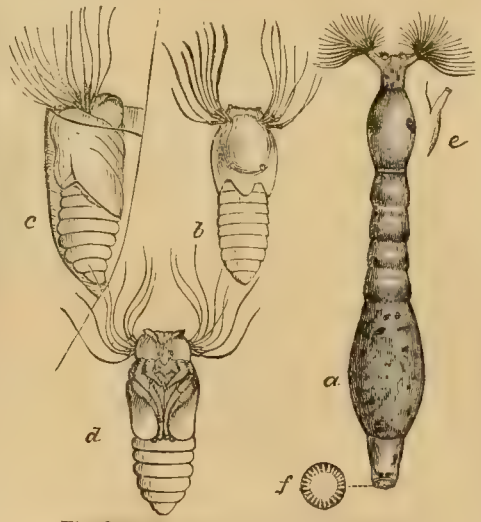


Fig. 2.—LARVA AND PUPA OF SIMULUM.

The Potato Rot.

The use of a Cryptogamic Professor at the Bussey Institution, (the Agricultural Department of Harvard), begins to appear. No. 15 of its Bulletin is a clear, straight-forward, and readable essay on the Potato Rot, and the fungus that causes it, to which is added some account of the Lettuce Mold. A few wood-cuts exhibit the character and appearance of these two pests. The article describes their mode of development and action, how they extend from plant to plant, and the conditions and circumstances under which they become formidable. The little fungus which produces potato-rot, is known to botanists under the name of *Peronospora infestans*; but as only a sexual fruit is known, (though that produces two kinds of spores), the true nature and name of fungus is not completely made out, because, as Dr. Farlow says, the oöspores (*i. e.*, the spores resulting from sexual propagation), have never been discovered. As to this, it may be said that if Prof. Farlow had not been out of the country at the time, he might have known that these long-sought oöspores had been discovered in potatoes at Washington, a good while ago, and were elaborately described and figured in one of the Reports issued by the Agricultural Department of the United States. We believe, however, that this renowned document did come to hand in the botanical laboratory of Strassburg University, while Dr. Farlow was a pupil there, and was received with ejaculations of wonder, and outbursts of merriment. In the present paper the subject is passed over with decorous silence.

As these oöspores, or true seed, of the potato fungus, have eluded all search in the affected plants or tubers, and as we have now gained the right to infer that all such fungi, no less than higher organized plants, do have some mode of sexual propagation; it is a natural conjecture that the latter takes place only when the fungus lives upon some different plant, in a manner analogous to rust in grain, which in one state lives and fructifies upon the grain, in another upon the Barberry, the two kinds of fructification being widely different. It is suspected that clover may be the alter-

nate host in the present case, and that the potato-rot may be propagated by means of oöspores which hibernate in this and other fodder-plants, and which reach the potatoes by way of the animal manure. At present this is a mere suspicion, one which suggests investigation. But the recent announcement that it is now known to be so, through the discoveries of Professor De Barry, is pronounced to be wholly unfounded. It does seem, however, that, in England, "there is a tendency for the rot to prove particularly bad when potatoes follow clover."—So that it is worth while to follow up the clue, both by investigation and observation. In order that farmers may do their part of the latter, Prof. Farlow propounds to them the following questions for this year's consideration:

1. What is the nature of the soil on which you have planted potatoes this year?
2. What crop preceded the potatoes?
3. What was the preparation of the land, and what manures were used?
4. What variety of potatoes were planted, and were the varieties early or late?
5. What was the date of planting?
6. What was the exact date of the appearance of the rot?
7. What varieties seemed to suffer least from the disease?
8. What proportion of the crop was destroyed?
9. On first noticing the rot, what was done to save the tubers, and with what result?
10. Following a clover-crop, how are potatoes affected by the rot, particularly badly or not? After potatoes does clover do well? Have you observed any fungus upon clover?
11. Following a wheat, oat, or rye crop, how are potatoes affected by the rot? Where wheat, oats, or rye follow potatoes, what is the result?

If the potato-plant actually does not produce oöspores in this country and in Europe, it is much more likely to die out or exhaust itself, or to be kept down by unfavorable seasons. The oöspores have greater tenacity of life under various conditions than the other spores. To show that some benefit may come from knowing where the oöspores of a fungus are produced, the case of the lettuce-mold, as investigated by Dr. Farlow, is in point. The lettuce-mold is a true *Peronospora*, *P. gangliformis*. Its oöspores are found to be particularly abundant in Groundsel, (*Senecio vulgaris*), a weed of common occurrence in lettuce beds. Accordingly the groundsel should be weeded out with great care.

As to what is to be done about potato-rot, all the suggestions that Prof. Farlow offers, in the present state of our knowledge, may be shortly given.

"From what we have seen about the cause of the rot and the knowledge which we possess of the habits of the *Peronospora*, it is evident that there is no such thing as a specific against it. Whatever completely destroys the fungus, will also kill the potato itself. The object is to prevent as much harm as possible from being done to the plants, in which the mycelium already exists, and to prevent the spread of the disease to healthy plants. If we could control the amount of moisture in the air about the time when the disease is likely to appear, say from the middle of July until the first of September, the mycelium would not increase to any extent to cause practically any harm. That we, unfortunately, cannot do; and all that remains is to drain the land thoroughly, or to plant in a dry soil. Since the disease does not appear until about the first of August, the early potatoes should be less likely to rot than late ones. Exactly what variety a farmer should plant, is not a question to be decided by a botanist; but it should, at any rate, be a vigorous grower, and ripen as early as possible, size and marketable qualities being equal. Certain varieties seem to resist the disease better than others, but as yet we know of none which may not be attacked. The precautions to be taken to prevent the extension of the disease, will be more definitely known when the plant in which the oöspores are produced has been discovered." We hope that some of the readers of the *Agriculturist* will consider the above questions, and at the proper time forward their replies to Prof. W. G. Farlow, Bussey Institution, Jamaica Plain, Mass.

A Rustic Pot Cover.

It often happens that one would like to bring a plant in flower from the greenhouse, to decorate the sitting room or dining room, or even to promote a plant from the window to the table. There is nothing so well suited for the growth of plants, as a common flower-pot, but however clean it may be, a pot is an unsightly object, and its rude appearance much detracts from the beauty of the plant it holds. Considerable ingenuity has been expended in devising covers of various kinds. Handsome porcelain or other vases, within which the pot may be placed, can only be provided by the wealthy; paper covers have been offered, but the dampness of the pot soon makes them limp and useless; the expanding cover, made of narrow strips of colored wood, which cross one another like a lattice work, answers a tolerable purpose, but still the pot shows through the openings more than is desirable. Messrs. Peck & Skilton, of Westfield, Conn., whose remarkably tasteful rustic work we have before noticed, seem to be on the right track, and make a pot cover which answers admirably for some uses. The engraving upon the next page gives a representation of the affair. If they will follow out the idea, and make covers of much lighter material, both in the body and in ornamentation, we think that they will meet a want that all cultivators of house-plants must have felt.

Culture of Cape Heaths.

BY PETER HENDERSON.

In but few cases has there been in this country an attempt at growing a collection of those beautiful plants, the Cape Heaths. In all my experience I have only known of three cases, besides the one here referred to, where success has attended the attempt. But the desire to possess and cultivate what is novel and rare in greenhouse and hot-house plants is increasing. The visits of our people to Europe are now quite frequent, and a desire to do what is done abroad results not only in the importation of novelties, but often in importing the skilled labor necessary to cultivate them. We have already many fine collections of rare Orchids, and other plants of the tropics, which are rather more easy of culture in our climate than in that of Britain, but the high temperature and dry air of our July and August have to be fought against if we would make Heath culture in our latitude a success. That this can be done, and has been done, a visit several weeks ago to the country seat of Mrs. John J. Mitchell, of Tarrytown, N. Y., most satisfactorily proved. The greenhouse and hot-houses form a curvilinear building of about 100 feet in length, with an octagon glass structure at each end of some 60 feet in diameter; in one of these octagon greenhouses is a collection of about 80 distinct species and varieties of Cape Heaths, and some 20 of Epacris. The gardener in charge is Mr. Wm. Monroe, who for seventeen years was foreman to Methren & Sons, nurserymen, of Edinburgh, and brings to the work his experience in a section noted for successful Heath culture. Mr. Monroe regards the culture of the Heath as simpler here than in Europe, except in our hot summer months, when every means must be used to lower the temperature and at the same time increase the moisture of the atmosphere in dry days. To do this, the greenhouse must be so constructed that a current of air can be admitted at the lowest point of the front walls; that is, if the upright or front walls are 4 feet in hight, one foot of the wall close to the ground must be open for ventilation, and at the highest point of the roof of the greenhouse a width of at least two feet should be made movable, to allow the escape of heated air. Besides this, to still further lower the temperature, a muslin shading is placed outside, to prevent the sun's rays passing through the glass. I emphasise "*outside*," for every now and then we see shading placed upon the *inside*, which is nearly useless, if it is desired to lower the temperature of the house. In addition to shading, the paths are splashed with water, which both gives the necessary moist condition of the atmosphere, and lowers the temperature. We find that by judicious ventilation, shading, and wetting the floor of a greenhouse in the hot days of summer, we can reduce the temperature 10 degrees below that of the outside atmosphere in the shade. By these means, Mr. Monroe gets his Heath house tempered down, so that his plants are brought through the firey ordeal of our dog-days unscathed. As soon as the cool September days begin, there is no further trouble; the Heath is then of as easy culture as an Azalea or a Camellia, and requires a treatment almost identical with them, so far as temperature is concerned. The soil necessary for the Heath and Epacris is peat and silver sand, or finely pulverized leaf-mold with sand might do where peat cannot be procured, but a soil of that soft character is indispensable, as the roots of these plants are as fine as hairs, and must have a soft medium to grow in. The specimens grown by Mr. Monroe were, some of them, 18 inches in diameter, and in the most vigorous health, and these too of kinds considered difficult to manage even in England. For example, here were fine specimens of *Erica retorta major*, *E. Hartnelli*, *E. Mackiana*, *E. eximia*, *E. Masoni*, and other rare species of which *E. tricolor* is the type, which to grow well is in Scotland or England considered to be a triumph of horticultural skill, and until now we believe has never before been so well done here.

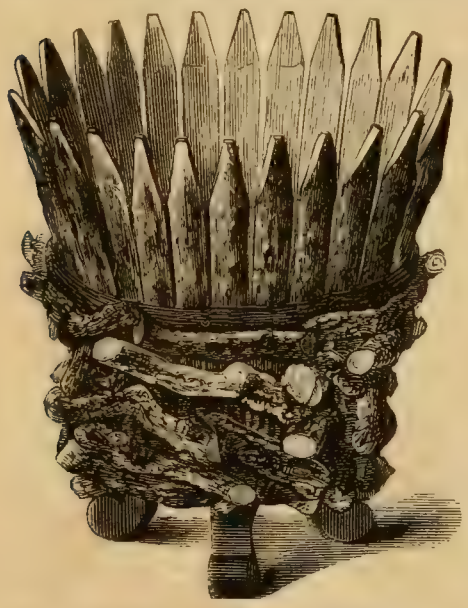
Of the softer and easier-growing kinds, such as *E. ventricosa*, *E. hyemalis*, *E. Wilmorei*, etc., they were here by the hundred, "growing like weeds." At the time of my visit many of the varieties were in bloom, and were well worthy of the extra culture required, not only from their great beauty, but from their rarity and novelty—qualities that may be looked for in vain in the collections of plants throughout the country. Is it not this rarity that gives the charm? No matter how well the chromo imitates the painting, or the plaster cast resembles the sculptured marble, the ease with which they may be produced makes them cheap, and cheapness makes them common, and the charm of rarity is gone. It is said that the Duke of Devonshire once became the possessor of a plant of great value, and on discovering that a duplicate of it existed, he purchased it at a great price and destroyed it, in order to have the pleasure of saying that he owned the only plant of its kind in England. Much as some may be disposed to deprecate the selfish exclusiveness that prompts such an act, it would be useless to deny that the same feeling, though in a less marked degree, prompts many others besides the Duke, and yet the results tend to elevating the taste for the higher achievements of horticulture. Mr. Monroe intends to show a collection of Heaths at the Centennial Exhibition, and he may do this with the assurance that no other collection of flora's treasures there will surpass it in interest.

Slitting down the Bark of Fruit Trees in Early Summer.

The writer remembers his father's doing this when he was a boy. Sachs, in his Text-Book, speaks of this as having been long ago advantageously employed in horticulture. Is the custom still kept up by orchardists?—It is well known to those familiar with the microscopical structure of wood, that the outer part of each year's layer, that is, the portion formed later in the season, consists of smaller wood-cells, and all flattened parallel with the bark. Now Sachs, (who likes to explain things mechanically), conjectures that this must be owing to the pressure of the bark on the cambium or forming wood, which would increase as the growth of the season goes on. And in his last edition he states that DeVries has proved that it is so by experiment. So that this old practice ought to be useful, by enabling the trunk of a growing fruit-tree to produce a greater amount of vigorous wood than it otherwise would do; and no harm is done when the slit heals promptly. A. G.

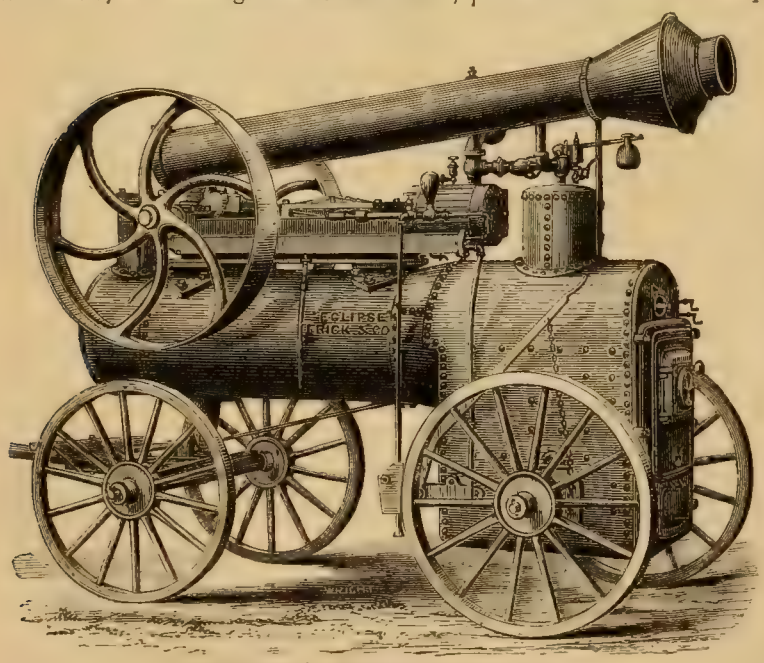
Mechanical Powers for the Farm or Workshop.

It is an accepted principle in the use of powers that one should never employ a man when he can use a horse, and never use a horse when the work can be done by either wind, water, or steam. For farm or rural labor the three powers last named may be very extensively applied with profit. Wind and water are



PECK & SKILTON'S POT-COVER.—(*See preceding page.*)

only applicable for stationary purposes. They are employed through the medium of machines, cheap in their construction and their use, and in many places can be made available where steam might be objectionable. But steam may be applied everywhere, and in many cases may with advantage displace the cheaper powers of wind and water. It is a portable power, and in this lies its greatest usefulness to the farmer. With a steam-engine he can pump water and force it to any part of the farm for irrigation or for his stock; he can thrash at the barn or in the field, or at his neighbor's fields and barn; he can saw fuel or lumber at home or in the woods; he can press hay, and gin, or pack cotton, or grind his own or his neighbor's feed, and do whatever work may be desired at home or away from it, and thus make it profitable for himself and convenient for his neighbors. The saving of time in doing his own work will make it possible for him to spare time to do work for others who may wish to hire his engine, and thus the benefits of steam-power be very largely extended. We have heretofore described various styles of mechanical powers, windmills, water-wheels, and steam-engines; and now illustrate a portable farm engine made by Frick & Co., of Waynesboro, Franklin Co., Pa., which has an excellent reputation. It is known as the Eclipse Portable Agricultural Steam Engine, and is specially manufactured for farm use. It is mounted on a suitable truck furnished with springs, where the boiler rests upon the axle, so that it may be moved over rough roads with safety. It is simple, safe, light, and effective, either as a stationary or portable engine. The smoke-stack is hinged, for the double purpose that it be out of the way when storing the engine under shelter, and to avoid the shaking of the long perpendicular cylinder during transportation. It has also a spark-arrester, so that even straw when placed on the top of it will not ignite. The same safety exists below at the ash-pan, which is provided with a close-fitting door, which can be closed if found advisable. It received the first prize medal over all other competitors at the Cincinnati Industrial Exposition of 1874, which is a valuable recommendation. In choosing an engine for any purpose, the special points to be considered are simplicity, safety, strength, and durability, but when an engine is chosen for farm use, safety from fire by sparks or ashes is one of the most important considerations. To be able to use an engine near the barn or a straw stack, or in a field in which there are dry, inflammable stubble and shocks of grain, is often very desirable, and this Eclipse steam engine here described is intended for these very purposes.



FRICK & CO'S PORTABLE STEAM-ENGINE.

The Florida Torreya.

In May last we gave an engraving of the California Torreya, or California nutmeg. As a supplement to Prof. Gray's admirable account of his visit to the Florida Torreya, (which we may regard as the original, it being the one first discovered, and upon which the genus was established), we give here an engraving prepared for that excellent work, Hoopes' "Book of Evergreens." It is a matter of regret that there is nowhere an engraving or other picture representing the whole tree; this illustration shows the foliage, a separate leaf of the full size being given at *a*, the fruit somewhat under natural size, *e*, the female flower enlarged, *d*, an enlarged male ament, *b*, and an enlarged anther, *c*. We hope, now attention is called to this interesting and beautiful tree, that some of our nurserymen may find it to their interest to procure a stock of it, as there are many who would gladly possess it for the name it commemorates, and at the same time ornament their grounds with one of the most beautiful, as well as rarest of evergreens.

THE FLORIDA TORREYA—LEAVES, FLOWERS, AND FRUIT.

THE COLORADO POTATO "BUG," which appeared on the Atlantic Coast in small numbers last year, is now in full force. In some localities it is very destructive to tomatoes, as it will be to egg-plants. Careful hand-picking and destroying the eggs will, if done in time, keep them under. As a last resort, use Paris green as directed last month on page 226. Examine the vines every day, and kill all found.

The Beech in Flower.

The writers upon landscape gardening, in describing the Beech, speak of the grace of the young and the grandeur of the old trees; they discuss its spray, its buds, its leaves, bark, and nuts, and even have something to say of its withered and dead leaves—but nothing of its flowers. Indeed, the idea of something brilliant and showy is so thoroughly associated with flowers, that many very intelligent persons seem surprised when we speak of the flowers of our common forest trees. In thickly wooded countries the indifference to trees in any other sense than that of timber and wood, is quite surprising. Every one, man and boy, can name the trees with the greatest accuracy by a glance at the bark, whether on the trunk or branches, nor are they less ready at recognizing them from the split surface; but show them a leaf, or a detached leafy twig, and they are quite at loss, and when it comes to the flowers, except in the case of the Tulip-tree, Locust, and other showy trees, they do not seem to have thought of their existence. There is, of course, a good reason for this; trees are felled in winter, when it is necessary to distinguish them by peculiarities that remain at that season, and it is really a matter of importance to know the differences shown by the bark. As to the beech, it is not our object to speak of the exceeding beauty and striking characters it presents at all ages, and at all times, but to call attention to it when in flower. Other trees are much more showy when in bloom, but for a peculiar beauty, a freshness, and spring-like air, the beech is unequalled. An engraving, which can only show form, fails to convey the effect where so much depends upon color, but we give one to show what the flowers are like. The long pointed buds of the beech are so much unlike those of other trees, as to attract the attention of all who care enough for trees to notice them. These buds open late in spring, and liberate the young shoot, which bears the leaves and flowers; the tender and partly expanded leaves are plaited in a most exquisite manner, and their green is such as is only seen by the painter in his dream, for it never comes from his brush. From the axils of the lower leaves of the shoot hang the staminate flowers, in roundish silky tassels, each hung by a delicate thread-like silky stalk, an inch or two long; an examination of these tassels shows them to be clusters of small, hairy, greenish bells, within which are numerous stamens. The pistillate or female flowers are much less conspicuous, and might escape the notice of a careless observer; these are found in the axils of the upper leaves of the shoot, usually two together upon the end of a short stalk; they do not look much like the prickly bur which, in autumn, encloses the beech nut; yet four scales will be found, which will develop into the four divisions of the bur. The expanding leaves and the silky tassels are not all that make the beech so beautiful in flower; at the base of each young shoot are the long wavy bud scales, of the richest brown, so thin and delicate that they look like small streamers hung out as decorations, and not at all like the useful blankets of bud scales which have kept all the preparations for this flowering time warmly enwrapped all winter. True, the flowering time of the beech is soon over, but he must be indifferent to beautiful things in nature who does not admire it while it lasts.

THE BEECH IN FLOWER.

The Large-Flowered Bellwort.

Among a pretty large collection of native plants which we have brought into the garden, there is none that have seemed to enjoy the change more than the Large-flowered Bellwort. The botanical name of the plant is *Uvularia grandiflora*; the genus being named by Linnæus, whose lively fancy sometimes saw resemblances which would not occur to others, from *uvula*, the appendage which hangs in the mouth from the edge of the palate. The specific name indicates that it is large-flowered, and the flowers are much larger than in other species, of which there are four in the Atlantic States, two of them quite common in the woods in spring, the one in question being more frequent in the northernmost states than elsewhere. The engraving shows the upper part of two plants of the natural size; the stems, from one to two feet high, are clothed with leaves of a very tender green, and the gracefully drooping flower is an inch and a half long, of a very pale yellow. The plant belongs to the Lily Family, and the flower is like a small bell-shaped lily. It can hardly be regarded as a showy plant, but there is that delicacy and grace about it, which seems to be peculiar to the early flowers of spring. If those fond of flowers, and have not the means to gratify their tastes by purchasing the florist's rarities, would turn their attention to the native plants which are to be found in the woods, swamps, and fields, they would be surprised to

LARGE-FLOWERED BELLWORT.

find what an interesting and very showy collection may be brought together at the cost of only a little trouble. Were we obliged to give up one or the other from our garden, the natives or the exotics, we should part with the exotics, and hold on to the wildlings.

New Tops on Old Pear Trees.

That the pear is a long-lived tree, the famous Endicott and Stuyvesant pear trees, going back two hundred years and more, attest. Yet we frequently find trees that look old at fifty years and less, with dead limbs, mossy trunks, and fruitless boughs. These old trees are often seedlings or of poor varieties, that have offered no particular inducement to their owners to care for them. A crop of astringent or sour pears is not much missed when it fails. These old trees sometimes occupy lawns or fields near the house, and will repay abundantly the little care that is needed to give them a new start, and to graft them with standard varieties. Some twenty years ago we took up one of these stunted old trees at a distance from the house, and removed it, with a block of frozen earth, upon a stone-boat to a rich border prepared for it in the fruit yard. It made a growth of a foot of wood the first season. It was then grafted with an improved variety; the grafts took kindly, began to bear the third year, and have yielded good crops of delicious fruit ever since. Five years ago we grafted an old tree in the garden, which bore only indifferent winter pears, about second-rate for cooking, with the Paradise of Autumn. We begun to get pears the second season from the grafts, and have had them in increasing quantity every year since. Last year it yielded over three bushels of splendid fruit, worth at least twenty dollars. The secret of success with these old trees is to stir the soil all around them as far as the roots extend, to manure liberally, to cut out all the dead wood, and about the second season, when the tree has got a good start, to commence grafting. We take three seasons to put on a new top, beginning with the highest limbs and working down. In renewing the vigor of the tree, almost any kind of manure or compost is available. Wood-ashes is one of the best fertilizers. Old bones, well buried, will pay a large interest on their cost. The contents of the privy vault and the cesspool, composted, are exceedingly valuable in renovating these old trees. In stirring the soil, care should be taken not to break the roots with the plow. We attach about equal importance to the stirring of the soil, and to the fertilizing, in the process of renovation.

A Pilgrimage to Torreya.

BY PROF. ASA GRAY.

DEAR EDITOR.—Ordered to go south until I should meet the tardy spring and summer, I was expected to follow the beaten track to East Florida. But I wished rather to avoid the crowd of invalids and pleasure-travelers, and turned my attention in preference to Western Florida, determined that, if possible, I would make a pious pilgrimage to the secluded native haunts of that rarest of trees, the *Torreya taxifolia*.

All that I knew, or could at the moment learn, was, that this peculiar evergreen Yew-like tree—prized by arboriculturists for its elegance, and dear to us botanists for the name it bears and commemorates—grew on the banks of the Apalachicola river, somewhere near the confluence of the Flint and Chattahoochee, which by their union form it. It was there discovered, nearly forty years ago, by Mr. Henry B. Croom, and had since been seen, at two or three stations, by his surviving associate, Dr. Chapman, of Apalachicola, author of the Southern Flora. Mr. Croom, upon ascertaining that he was the fortunate discoverer of an entirely new type of coniferous trees, desired that it should bear Dr. Torrey's name; and the genus *Torreya* was accordingly so named and characterized by the Scotch botanist, Arnott. It is of the Yew family, in foliage and in male flowers much resembling the Yew itself, but more graceful than the European Yew-tree, wholly destitute of the berry-like cup which characterizes the latter genus, and with the naked seed itself fleshy-coated, and larger than an olive, which it resembles in shape and appearance. One young tree, brought or sent by Mr. Croom himself, has been kept alive at New York—showing its aptitude for a colder climate than that of which it is a native—and has been more or less multiplied by cuttings.* Sprigs from this tree or its progeny, were appropriately borne by the members of the Torrey Botanical Club, at its Founder's funeral, two years ago, and laid upon his coffin. But very few botanists have ever seen the tree growing wild, and in its full development. I was desirous to be one of the number.

Among the broad, black lines with which the railway map is chequered, I found one which terminates at Chattahoochee. This was the objective point, and the way to it seemed plain enough, though long. Pilgrimages to famous shrines by railway, in the Old World, are now-a-days systematized and made easy. The untried one which I undertook, appeared to offer no privation nor difficulty, except the uncertainty whether I should be fortunate enough to find the grove which I sought. And, indeed, there was little privation to speak of. It was, however, rather trying to us, (*i. e.*, to myself and my companion in travel and life), when, after leaving Savannah on an early April morning, with the assured understanding that we should reach Chattahoochee late that evening, we learned that we were to be left for 20 hours at a small hamlet on the borders of East Florida, named Live Oak—a manifest *lucus a non lucendo*, as there were no Live-Oak trees in the neighborhood, but a prevalent growth of Long-leaved Pines. There was some good botanizing to console us, and, thanks to the railroad conductor for directing us aright, unpretending, but truly comfortable quarters for the night. Then, the next day, resuming our journey after a twelve o'clock dinner, which we were to mend with a supper at Tallahassee, we were at length informed that we were to be supperless; that the stations, both of Tallahassee and Quincy, were out of town and out of reach of all edibles; that Chattahoochee station, to be reached after ten o'clock, was only a freight house on the wild and wooded bank of the river, built upon piles in the swamp, reached at ordinary times over a mile of trestles, and now so overflowed that it probably could not be reached at all, certainly not that night; that the train would stop for the night two or three miles back in the woods, where the agent had taken up his abode in a box-car; that the town of Chattahoochee, a mile away, large as it appeared on the map, consisted mainly of a state-prison and a couple of grocery shops—neither of which were quite proper for passing a night in, even if we could reach them; in fine, that our only course would be to sleep in the car (which made no provision for it), and crave from the agent of the road a share of his breakfast.

The kind and intelligent fellow travelers as far as Tallahassee and Quincy, who gave us this disheartening information, finding that we were not disposed to stop short of our object, remarked that they had set us down as eminently philosophical people, since we had passed a night at Live Oak and still possessed our souls in patience, (a view which a couple who had stopped at the hotel there practically confirmed), and so left us with their good wishes, but evidently faint hopes. The weekly steamboat, which was to call at the landing next day, would eventually relieve us; and so we resolved to make the best of it. The worthy young conductor, who was to sleep in the car also, kindly proffered a share of his supper; but we fortunately had a bottle of cold tea, some crusts of bread ten days old, and wafer-biscuits, upon which we scantily supped, and then, folding around us such drapery and wraps as we had, lay down to sleep upon the couches which the conductor ingeniously arranged for us, by some skillful adjustment of the car-seats. In the morning, after due ablutions made at the tank of the locomotive, we were hospitably welcomed by the agent, Gen. Dickison, and his son, to a much needed share of their breakfast in the stationary box-car, which served both as bed-room, parlor, and dining-room.

To our great delight we found that Gen. Dickison knew the tree which I was in search of; and it was arranged that his son should conduct me to the locality, not far distant. So striking an evergreen tree could not fail of notice. The people of the district knew it by the name of *Stinking Cedar* or *Savine*—the unsavory adjective referring to a peculiar unpleasant smell which the wounded bark exhales. The timber is valued for fence-posts and the like, and is said to be as durable as Red Cedar. I may add that, in consequence of the stir we made about it, the people are learning to call it *Torreya*. They are proud of having a tree which, as they have rightly been told, grows no where else in the world.

My desire for a sight of it was soon gratified. Making our way into the woods north of the railroad track, along the ridges covered with a mixed growth of pines and deciduous trees, I soon discerned a thrifty young *Torreya*, and afterwards several of larger size, some of them with male flowers just developed.

As we approached the first one, I told my companion that I expected to find, under its shade, a peculiar low herb, which I described, but had never yet seen growing wild. And there, indeed, it was—greatly to the wonderment of my companion—the botanically curious little *Croomia pauciflora*, just as it was found by Mr. Croom, when he also discovered the tree, nearly forty years ago, probably at a station several miles further south. I was a pupil and assistant of the lamented Torrey when Mr. Croom brought to him specimens, both of the tree and of the herb, both new genera. The former, as I have stated, was named for Dr. Torrey by his correspondent, Arnott. The latter was dedicated to its discoverer, by Dr. Torrey. I well remember Mr. Croom's remark upon the occasion, that, if his name was deemed worthy of botanical honors, it was gratifying to him, and becoming to the circumstances, that it should be borne by the unpretending herb which delighted to shelter itself under the noble *Torreya*. It is not, as Mr. Croom then supposed, exclusively so found; for it grows also in the central and upper portions of Alabama and Georgia, where *Torreya* is unknown, but where I fancy it may once have flourished. I can not here detail the reasons for this supposition.

There is a second *Torreya* in Japan, founded on Thunberg's *Taxus nucifera*, of which I saw original specimens at the British Museum, in the winter of 1838-9, and then identified the genus. There is likewise in Japan a second *Croomia*, very probably in company with the *Torreya*. A third *Torreya* inhabits *California*, but it has no associate *Croomia*.

I have formerly treated of the peculiar distribution of these genera and species between the United States and Japan, have collocated a large number of equally striking similar instances, and have offered certain speculations in explanation of them. The views maintained have been more and more confirmed, and are now adopted by the leading philosophical botanists.

The few hours devoted to this first search for *Torreya*, pleasant as they were, yet were too scantily rewarded to satiate my interest. I saw no tree with trunk over six inches in diameter, and found no female blossoms. It was necessary to hasten back to the railway car, to await the expected summons to the steamboat. I bore with me, besides my botanical specimens, a stick of *Torreya*, suitable for a staff, which I propose to make over to the President of the Torrey Botanical Club, for the official baton. Before long the whistle of the steam-

* The *Agriculturist* for May, states that the tree spoken of, or its seed, "was brought from Florida by the late distinguished Major Le Conte." I am confident that this is a mistake, and that Le Conte knew nothing of this tree in its native station. If my recollection is correct, at least two seedling trees were placed in Dr. Torrey's hands by Mr. Croom, one of which was consigned to A. J. Downing, of Newburgh, the ultimate fate of which is unknown to me, the other to Mr. Hogg, senior, which, as the *Agriculturist* states, is now in Central Park.

boat announced its approach to the landing, and offered us a prospect of a much needed dinner; the water had fallen sufficiently to allow us to be conveyed to the wharf upon a hand-car, and so we embarked for Apalachicola *via* Bainbridge. That is, we went up the Flint River about 40 miles and thence back, in the night, past the place of embarkation.

I will not here give any account of a delightful 10 days' episode, beginning with the voyage down the brimming river, bordered with almost unbroken green of every tint, from the dark background of Long-leaved Pines to the tender new verdure of the Liquidambar and other deciduous trees in their freshest development, interspersed with the deep and lustrous hue of the *Magnolia grandiflora*, and, when the banks were low, dominated by weird naked trunks of Southern Cypress (*Taxodium*), their branches hung with long tufts and streamers of the gray and sombre Southern Moss (*Tillandsia*) below, while above they were just putting forth their delicate foliage. Along the lower part of the river, occasional Palmettoes gave a still more tropical aspect. Then followed a week and more at dead and dilapidated, but still charming Apalachicola, where the Post Office opens on Monday evenings, when the steamboat arrives, and closes for a week the next morning, when she departs,—where the climate, thanks to the embracing Gulf, is as delicious in summer as it is bland in winter; where game, the best of fish, and the most luscious oysters are to be had almost for nothing, and blackberries come early in April when the oranges are gone; and where, far from the crowd and bustle of the world, with Bill Fuller for caterer, and his wife Adeline for cook, the choicest fare is to be enjoyed at the cheapest rate. Then there was the pleasure of renewing our acquaintance with Dr. Chapman, and botanizing with him over some of the ground which he has explored so long and so well, of gathering, under his guidance, the stately *Sarracenia Drummondii* in its native habitat, and, not least, acquiring from him fuller information respecting the localities where *Torreya* grows.

The return voyage up the river was not less enjoyable than the descent. It was so timed that the bold bluff of Aspalaga, where the tree was first found, was reached after sunrise. But it was sad to see that the Torreya trees, which overhung the river here in former days, had been cut away, perhaps for steamboat fuel. So I did not land; but leaving the boat a few miles above, at the upper Chattahoochee landing, while it made the run to Bainbridge and back, I had a long day to devote to *Torreya*. Following Dr. Chapman's directions, I repaired to the wooded bluff to the north of the road, where I soon found abundance of the trees, of various ages, interspersed among other growth. The largest tree I saw grew near the bottom of a deep ravine; its trunk just above the base measured almost four feet in circumference, and was proportionately tall. But it was dominated by the noblest *Magnolia grandiflora* I ever set eyes on, with trunk seven and a half feet in girth.

After long search one tree was found with female flowers, or rather with forming fruit, from which a few specimens were gathered. Seedlings and young trees are not uncommon, and some old stumps were sprouting from the base, in the manner of the Californian Redwood. So that this species may be expected to endure, unless these bluffs should be wantonly disforested—against which their distance from the river and the steepness of the ground offer some protection. But any species of very restricted range may be said to hold its existence by a precarious tenure. The known range of this species is not more than a dozen miles in length along these bluffs, although Dr. Chapman has heard of its growing further south, where the bluff trends away from the river. At least the Yew-tree grows there, which Mr. Croom found with the *Torreya* near Aspalaga, and I heard of it (identifying it by the description) as growing five or six miles away.

Returning to the boat at nightfall, I brought with me thirty or forty seedling Torreyas, which, being too far advanced to be safely sent far north this spring, have been successfully consigned to the excellent Mr. Berckmans' care, at Augusta, Georgia. I hope that one or more of them may in due time be planted upon the grave of Torrey.

A word or two of Mr. Croom and his sad fate. His name merely is known to botanists as the discoverer of *Torreya taxifolia* and of *Croomia pauciflora*, and as the author of a monograph of *Sarracenia*, in which the handsomest species, *S. Drummondii*, was originally described and figured. He was the first to find this in blossom, Drummond having seen and collected the leaves only, in a winter visit to Apalachicola. Of the botanists who remember and personally knew him, only Dr. Chapman and myself survive. Mr. Croom, originally, I believe, of Newbern, North Carolina, had a plantation at Quincy, Florida, and another at Mariana, east of the Apalachicola river; and it was in passing from one to the other that he discovered the tree of which I have been discoursing, as well as the herbaceous plant which bears his name. He was an accomplished and most amiable young man, full of enterprise and zeal for botany, and much was expected from him. But, just as he was entering upon his chosen field, and had made preparations for a thorough exploration of Florida, in connection with his friend, Dr. Chapman, he was lost at sea, with his wife and all his children, in the foundering of the ill-fated Pulaski, between New York and Charleston.

I have been told that two seedling Torreyas which Mr. Croom planted near his house at Quincy, and which had become stately trees, have recently been demolished by the present proprietor; also that a tree of Mr. Croom's planting still flourishes in the grounds of the State-house at Tallahassee.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Household Inquiries.

Dish Washing.—"Mrs. E. P. W." wishes to know if we ever heard of such a thing as a dish-washing machine.—Yes, we have heard of such a machine, and seen an engraving of it. After it was invented, described, and figured in one of the papers devoted to inventions, that was probably the last of it, for we never heard of one in use, and never expect to. The great trouble about a machine is that it can not think, and will give the same treatment to a delicate China saucer that it would to a large heavy platter. To be sure, dish-washing does not demand a high order of intellect, but it requires some thought, and there are many different articles, each of which must be handled differently.—The same lady asks for a rack upon which to drain dishes and save wiping. If any of our housekeepers have an article of this kind that they have found useful, we hope they will tell others of it.

Dusting Ornaments.—"Mrs. T. M. L." The best way to remove dust from delicate articles, the parts of which can not be readily reached by an ordinary duster, is by blowing. The city furnishing stores keep small and exceedingly neat bellows, which, when we first saw them, we supposed were some child's toy, but learned that they were made expressly for dusting mantel ornaments and similar articles; they give a small but strong stream of air which, reaching every minute crevice, very cleverly dislodges the dust.

Keeping Sausage Meat.—"Miss C. N. C." After trying several methods, we have found one which will keep the meat in perfect condition for several months. In cold weather there is no difficulty, but as soon as it becomes warm, it will spoil unless the air be perfectly excluded. As soon as the sausage meat is made, we make up into cakes that which is to be kept, and cook it the same as for the table; the fried cakes are then placed in a stone jar, and the fat which comes from them is poured over them, and as this is not enough, more lard is melted and added, to thoroughly cover the cakes. They should not be pressed against the sides of the jar, but so placed that each will be completely surrounded by the fat. When needed they require only to be warmed through, and they are ready for the table. We do not know how long the meat will keep in this way, but the writer has kept it perfectly well until the middle of June; not caring for sausage in warm weather, we do not usually put up enough to last until that time.

Ice Cream.—Mrs. Hartshorne. We do not recommend one freezer over another; have used those by two different makers, and can see no difference in them. Probably one of the leading kinds will freeze as quickly as another, and we do not regard very rapid freezing as desirable. The cream requires a certain amount of beating and stirring in order that it may have the proper smoothness. The fineness of the ice has much to do with the rapidity of freezing. We remember seeing a maker exhibit his freezer to show that he could make ice cream in three minutes. We noticed that he started with cream which had been for some time kept upon ice, and was consequently nearly ice-cold; he used fine salt and ice reduced to the greatest possible fineness; with these he made short work. Ice is generally used too coarse. Have a strong bag and a heavy wooden mallet; place the ice broken into small lumps in the bag, and then pound the ice through the bag, laid on some solid place, with the mallet; this will make the ice very fine. In keeping the cream after it is frozen, larger ice may be used, and only a moderate quantity of salt.

Cleaning Marble.—"R. H. S." The question "How to clean marble," is very indefinite. In removing stains of all kinds it is necessary to know what caused the trouble. If the marble is soiled by grease, pipe clay mixed to a paste with water spread over the stain, and allowed to dry and remain for several days after it is dry, may be of use, but it is a very difficult matter to remove grease or any other substance that has entered the pores of a material of such close texture as marble.

Tin Weddings.

Passing an extensive furnishing house twice daily, we most always give a glance at the show-window. Some months ago we saw a most beautifully fashioned shoe on exhibition, which appeared to be made of the finest planished tin. We wondered what it could be for; it was too large for a smoker's ash-receiver, and could hardly be an article for kitchen or table use; several days after, and before we had time to step in and solve the matter, there appeared by the side of the shoe an elegant fan of the same material, at least so far as fine workmanship could make a tin-fan elegant; this added to the mystery, but in a day or two all was made plain by the displaying of a card reading "Articles for Tin Weddings." All that we know of "tin weddings" is that the fifth anniversary of marriage is by some people celebrated, as a sort of burlesque upon silver weddings, by a party, at which the guests made presents of tinware. The presents were formerly of useful articles, but now it seems that the burlesque itself is travestied, and much ingenuity is expended in making articles for tin weddings which can be of no possible use to those who receive them. Quite a large number of these articles are now imported from France; two of these have already been named; besides these we found on inquiry there were ridiculous bouquets of tin flowers; preposterous necklaces, and other jewelry of skillful workmanship, but all of the same cheap material; a tin saw and other tools for a mechanic; instruments supposed to be emblematic of the medical profession, and other curious, expensive, and equally useless articles are offered. Now we believe in innocent amusement, and if any fun can be had out of a tin wedding—if the parties most concerned are so disposed—so be it, but there should be some sense even to our nonsense, and we must say that we regard this matter of tin shoes, tin bouquets, and the like, as carrying the matter just a little too far.

Home Topics.

BY FAITH ROCHESTER.

Use the Sunshine.

"The sunshine is a glorious birth," giving warmth, giving light, giving life to all nature. It

Fig. 1.—COFFEE TREE—LEAVES, FLOWERS, & FRUIT.

takes us long to find out our best friends, and we have scarcely begun to appreciate our sunshine. We hide away in dark, damp houses, and groan, and ache, and cough our lives away; while a little more sunshine, used all day, and every day, when it can be had, would make our lives not simply endurable, but joyful. I have learned to dread window-blinds, and even white window curtains that can not be entirely drawn aside during the day. I like a full blaze of daylight in my living and my sleeping rooms, except on very hot days, when every living thing must crawl into the shade. But there is, perhaps, no day so extremely hot, as to justify a twilight dimness of light all day long, in rooms where people live. No rooms can be healthy that are kept dark. Children can not thrive, any more than plants, unless they live habitually in the light. Invalids neglect one of their best means of recovery to health, when they retire to darkened rooms, and learn to dread the light. It is true that persons, who have lived for years in dimly-lighted rooms, feel pained by the brightness of better lighted apartments, and dread to go out-doors without veils and parasols; but that is only because darkness has made them sickly creatures, out of all harmony with healthy conditions. Some housekeepers love darkness rather than light, because their deeds are evil. They do not wish their dusty corners to come to the light, and be reproved. Others place an inordinate value upon the bright colors of their carpets, not knowing that bright faces and bright spirits are far more important than carpets, and that bright faces and bright spirits depend much upon the sunshine.

I wish every housekeeper would turn all her bedding into the bright sunshine every pleasant day, and on rainy days some artificial heat might be used instead. We hope for the time when bathing facilities will abound, when clean bodies will lay them down to sleep in clean beds, and sleep will indeed be balmy. If any reader does not understand this, let her sun only the sheets of her bed, and her night-clothing, for two hours every forenoon, half-a-dozen times, and she will notice how perceptible is the fresh, clean smell they have at night. Merely to air a bed in a shady room, is not half so well. The bright sunshine, (perhaps I ought to say the *hot* sunshine, for I notice that the bright winter sunbeams do not entirely produce the same effect,) seems to take out all of the perspiration, all of the personal odor, which is apt to linger about bedding and clothing in the summer. When it is convenient to air freshly ironed garments in the sunshine, this is much better than to hang them by the fire. You will find that they have a different smell, and one that is very fragrant.

The Baby Carriage.

We can do very well without cradles for our babies. I don't know as my children or myself have suffered for lack of one. But a baby-carriage seems indispensable. Without one, how can a child too young to walk get plenty of out-door life? I wish that good baby-carriages were cheaper, so that every child might have the use of one. Some of the cheap carriages are so heavy, so hard to draw or push, that it is quite a task to use them. Many of the two-wheeled carriages come under this condemnation, but not all. There is a danger in the use of two-wheeled and three-wheeled coaches, which is avoided by the use of a carriage with four wheels—the danger of tipping over when the child leans too heavily forward, to one side, or when one presses upon one side of the handle; but the four-wheeled coaches are expensive, and a careful nurse can get along well enough with either of the others, which is well made in other respects. It should be hung so as to give an easy motion to the child, and a light weight to the person moving it. The body should be so shaped that a young baby can lie straight in it easily, without getting humped shoulders. If the carriage is pushed from behind, it is difficult to keep good watch of the little one, unless the shade is adjustable like the umbrella shades, and these do not afford the same protection from wind as the close old-fashioned covers.

To Protect the Purity of Children.

This is a subject of great anxiety with good mothers, and many such read the article entitled "Don't touch the Children" in the *Agriculturist* for May.

Fig. 2.—PICKING THE COFFEE.

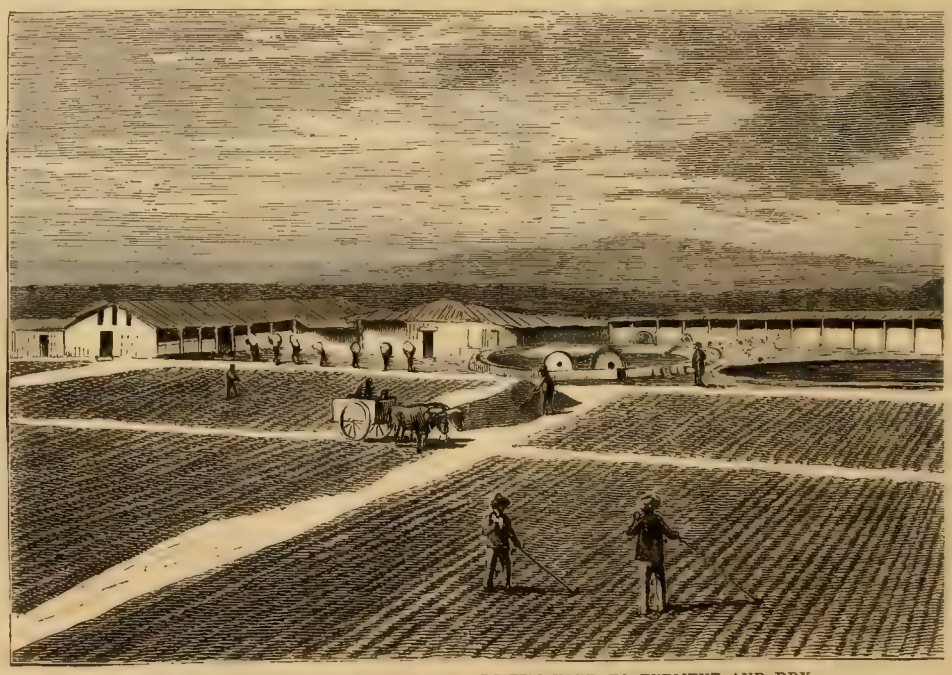


Fig. 3.—THE COFFEE BERRIES SPREAD IN THE YARD TO FERMENT AND DRY.

For nearly a year my children lived close by a railroad depot, and people wondered that I was not in constant alarm lest they would get killed or seriously injured by the passing trains, they appeared to be so fearless in their investigations. But this danger was never uppermost in my mind. If my boy was late in coming home, my first fear was lest he might be learning to "loaf" in the little store close by, which seemed to be full of men and tobacco smoke in the evening, or lest he might have learned to endure the profanity and obscenity in which many railroad employees indulge. To lose a child by death is not the saddest loss to a mother.

But one thing is certain: it is useless to think of preserving the infantile innocence of our children unless we keep their minds infantile in other respects, and this is not desirable. Neither is it desirable to preserve the innocence of infancy unchanged. It is simple *ignorance* of good and evil, and no one is fit to live a manly or womanly life who does not know the difference between good and evil. Yet none of us would hasten to make our children familiar with evil. We must only recognize the fact that if they live in this world they will have to meet with various forms of wickedness, and we should study how best to prepare them to walk unscathed through life's ordeal.

It has been customary to keep from children much knowledge which it would really be better for them to receive "in the cool innocency of childhood," while yet those passions are dormant, which may some day become the means of terrible temptations. The question is—who shall impart such information? Only the pure in heart ought to attempt it, but if mothers are faithful to their duty, the task will pretty surely be theirs. I feel sure that it is the best way to give truthful answers to children's curious questions about additions to the family. Those who have not tried it, have no idea how easily this curiosity can be satisfied without falsehood, if it is not allowed to feed

and grow on mystery. I know what I am saying. Very likely the answer, "God gave it to me," will satisfy the inquirer of three years old; and that I regard as a truthful answer. Is not He the one Life-Giver? Is He not *creating* now as much as ever? Can any *growth* go on without His power? But other explanations will be called for at a later day, and they must be bravely and tenderly given *when called for*. A child's curiosity is usually healthy, and calls for wholesome gratification—provided it lives among good people. Curiosity grows morbid when it is baffled. Shall it have the truth from one who loves its soul, or such impure communications as any evil-disposed person may choose to give? I dare not risk the latter. I dare not leave a darling child in such ignorance as will make it the comparatively easy prey of vice.

One might imagine that a child's thoughts would be running too much upon the subjects of which we now speak, if informed at all thereon; but it is not so, according to my observation. Children are inquiring about everything, and in an active child one impression quickly follows another.

We have no choice in the matter, whether our children shall grow up in *ignorance* of the right and wrong use of certain organs and passions, unless we are able to seclude them entirely from the world into which they have been sent. The choice left us is, who shall inform them, and how, and when? I should say, one or both of the parents, with religious tenderness, as speaking upon the most sacred themes, and just when the natural opportunity is given, at each time when the confiding child comes to its best friend, with a question which springs naturally from a young and innocent heart. It may *all* be told thus, during the growing years, little by little, as the child's development suggests new needs, told as something that is never to be spoken of with vulgarity, but as serious truth between parent and child, or as scientific facts not suitable for random discussion.

We must do what we can to save our children from vicious associates, but most of us will suffer many a heart-ache, because of the evil influences around our children. Danger sometimes lurks where we least suspect. Obscene books circulate among the good and respectable children of a school taught by some excellent teacher, or vicious practices are secretly taught by "well-behaved" little cousins. But if we can keep the confidence of our little ones, so that they cannot enjoy keeping any secret "from mother," but will come spontaneously to us with every new thing that interests them, we may be able to save them from any serious moral poison. This seems to me our safest course to save our children, to be ourselves their most intimate friends, talking confidentially with them upon such subjects as interest them, so that they will not be driven elsewhere to get relief for their itching curiosity, or their over-burdened minds, and receive impressions that are difficult to eradicate.

The Emancipation Suit.

I referred to this suit some time ago, but lately I have had a chance to examine and try a summer suit made by the Boston Dress Committee, after this pattern, which they recommended as superior to all other patterns. It is certainly better than anything else I have seen. The waist is easy in its perfect fit, and by extending below the waist line, gives room for three rows of buttons, the lower ones for the drawers, the next row above for "dress drawers," when worn, as they should be when going out in cold weather, (over-drawers made of flannel or waterproof, or of material like the dress), and the upper row of buttons for the skirt or skirts. By this arrangement one band does not over-lie another. The fullness across the breast is not made by setting in a simple straight piece of cloth, gathered at top and bottom, but is scientifically arranged to fit, and at the same time support the bust. Thus it answers the purpose for which many women profess to wear corsets. Elastic stocking-supporters button to each side of the waist, and every article which a woman finds *necessary* to wear on any occasion, may in some way be supported by this carefully devised waist.

Fig. 4.—MILL FOR CLEANING THE COFFEE.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks—Something about Coffee.

I suppose that most boys and girls who read this, know what Coffee is, even if they do not drink it. They know that it comes from the store, and as some is called Java, and other kinds Rio and Maracaibo, they are probably quite sure that it comes from some far off countries. A friend from Brazil brought some neat little sketches of the way coffee is prepared for market, and they being very interesting to me, I thought they would be so to you, so I had them engraved, and very pretty pictures they make. But before we talk about the preparing, let us see what coffee is. You perhaps hear the store-keeper speak of the coffee grains as "coffee beans," and may think that it grows in a pod much like the common bean, but this would be a great mistake. As you can only see the coffee plant in some rare collection of greenhouse plants, here is an engraving (figure 1), of a twig showing the leaves, flowers, and fruit. The coffee tree would grow 20 feet or more high, but in the plantations they do not allow it to grow over 10 feet high, as it would be too much trouble to pick the coffee if too high. We have no common plants very closely related to coffee, it belongs to a very large family of plants, of which there are many in tropical countries, and very few in ours. It is called the Madder Family, and the only very common plants of that family in the northern states that I think of, is the Button-bush in the swamp, with its round head of white flowers late in summer, and the beautiful little Partridge-berry, or Twinberry, that you find in the woods, growing flat on the ground, with its white hairy flowers, (oh so sweet and "woodsy"!) and bright red berries that it takes two flowers to make. These are far off cousins of the coffee, but do not look much like it, as you can see by the engraving. Well, you must imagine these leaves in the engraving to be six inches long, and all the rest enlarged in proportion, and you can then judge how the coffee plant looks. The flowers are white, and have a very pleasant, though not strong scent, and after these fall, then the fruit appears; this, when just ripening, looks as much as can be like little cherries. You may be sure that a coffee tree is a very pretty sight, for I have seen several in greenhouses, and it must be much finer in the open air; the leaves are so bright-green, the flowers so white, and the fruit is bright-red when it begins to ripen, and turning to a rich purple color when "dead-ripe." The fruit is only like a cherry outwardly, for if you break it open, you will find, instead of one round stone, two that are half round, with their flat sides towards each other. A berry cut across is shown in the engraving. So the coffee, instead of growing like a bean, is the seed of a berry. The gathering and preparing for market is shown in the other pictures, but before I describe them, let me answer a question that many of you no doubt are ready to ask—"How came people to use coffee. Where did it first come from?"—It is said that the coffee was first used in Abyssinia, (look at your Atlas), and it grows wild there, especially in the district of Kaffa, from the name of which we get the word coffee. Would you like to know who first brought it from Abyssinia? I doubt if you will recollect his name, as it is no less than Djemal-eddin-Ebn-Abou-Alfagga. This man with a name brought coffee to Aden, (Atlas again), and from there it gradually spread to other countries. It was at first used by the Mahommedans who wished to keep awake during some of their all-night ceremonies, and it was passed around in their mosques during their religious services. Coffee in early times was not in general use as it is now, but was sold only at coffee-houses, the first one in London was opened in 1652, and these houses in England kept up for a long time. Coffee was at first only cultivated in Arabia, (Atlas), and other parts of the East, but the use of it so much increased, that it was after a while grown in almost all warm countries. It is now cultivated in the East Indies, the West Indies, Brazil, Hayti, Venezuela, Central America, and elsewhere. Before the coffee appears in the cups upon the table, it has to go through many hands. In South America, where it rains often, the coffee is picked before it is so ripe as to be beaten from the tree by the rain storms, and this makes work for men and women, young and old; figure 2 shows the coffee plantation at picking time. You must recollect that now the coffee grains are in the little berry or fruit. The berries are taken to a large yard seen in fig. 3, here the ground is very smooth and hard, and here they are spread in layers several inches thick, and the berries first ferment or spoil, the workmen giving them the needed turning and stirring, until after some weeks the juicy berry has become dry. Then to get rid of the dried berry, and also a skin that is around the seeds, the mill shown in fig. 4 is used. The large rollers you see in the picture go round and round in a channel, where the dried berries are put. The rollers are heavy enough to break up all the other parts but the seeds—for you know that raw coffee is pretty tough, and leave them whole. Then all the dirt and husks have to be separated, and this, on some plantations, is done by washing, and on others by a sort of fanning mill, very much like the one used by farmers to clean their grain. Then you will think the coffee is ready for market; not quite yet. A sensible farmer does not put his big and little apples, and the fair and the small and ill-shapen ones into the same barrel, but he assorts them, and that is what the coffee grower does with his produce, which is assorted into several kinds. Small work you will think; so it is, but it gives employment to a great

Fig. 5.—WOMEN ASSORTING COFFEE.

number of women, who sit at a table properly arranged, as in fig. 5, so that they can push the largest grains into one bin, the smaller into another, and the poorer stuff into a third—each grain is thus handled by these women, who sit all day long at the work. After all this it is put into bags, and goes to various parts of the world. I suppose you know what happens to the coffee after it gets to us. And then what quantities of coffee come to these United States! Here is something that our forefathers who first settled the country had probably never seen, if they had even heard of it, and now we import about three hundred millions of pounds of it; to be more exact, in 1872 there came into the country 298,805,946 pounds of coffee!

Aunt Sue's Chats.

ALLIE wants to know if I will tell her "how to clean hair switches nicely." It is a little out of my line, but I like to oblige. Put a small tea-spoonful of bi-carbonate of soda, (cooking soda), into your wash-basin; pour over it four or five pints of water, and wash the switch thoroughly. Then rinse it more thoroughly in clear water. Wipe it as dry as possible, and hang it in the air. When nearly dry, smooth it a good while with the hand....I don't like the use of hair-grease, for I think if the scalp is kept well washed, and the hair thoroughly brushed, it will be glossy enough; but if hair-grease *must* be used, I do "know" a very nice preparation, which I will give for the benefit of whom it may concern.

Recipe for Pomatum.—White wax, 1 oz.; spermaceti, 1 oz.; sweet oil, 6 oz. (1½ cupful); rose-water, 2 oz. (1 wine-glassful). Melt the wax, spermaceti, and sweet oil together. To do this, place the jar, or whatever you use, in a sauce-pan of water, putting a chip or something else under it, to keep it from touching the bottom of the sauce-pan. Set the whole over the fire, and when the materials are completely melted, take it off and beat and stir the mixture while cooling, adding the rose-water a little at a time, until it becomes white and creamy. If you wish any other perfume than that of the rose-water, you can stir in a very little of whatever you may fancy. This is the *least greasy grease*, the girls tell me, that they ever used, as it does not soil the ribbons on their hair.

GEORGE E. MILLS.—"AUNT SUE'S PUZZLE BOX" is simply the name given to the puzzle department.

MARY J. W. says she doesn't know how to make paper-windmills, and wishes I would describe them to her. Well, perhaps there are two more people in the world who do not know how to make them, and as they ought

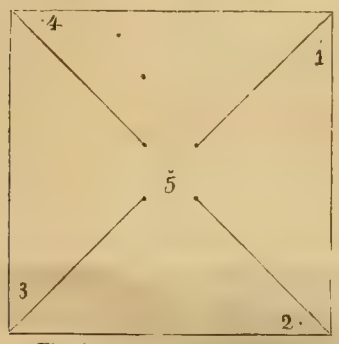


Fig. 1.—THE PAPER MARKED.

to be taught, I do hereby give them the benefit of instruction. Cut a piece of writing-paper exactly square. Crease it across the middle, diagonally, both ways. Cut it in the creases to within an inch or so of the center. Now get a pin and stick it through the dots; first 1, then 2, 3, 4, and finally through dot 5 into a small stick, (or

Fig. 2.—THE WINDMILL MADE.

even into a match, if you are sure there is no phosphorus left). Hold it in front of you and walk quickly across the room; or if you are in the open air, hold it towards the wind, and then see the delight of the baby, for whom you made it, as the windmill whisks around "like a thing of life."

MRS. EMILY B.—Your favor, concerning crosses, is received. I do not know the kind to which you refer, unless you mean those made with stars composed of four doubled strips of paper. A very pretty and simple cross

ORNAMENTED BARK-CROSS.

may be made of two pieces of bark, fastened across the center, with wire or nails, and tastefully decorated with pressed vines, leaves, berries, moss, etc. A square piece of wood for the base, covered with moss, etc. Or it may be made without a base, and fastened against the wall. Little vines made of wax leaves and berries look very pretty twisted around the cross. If bark is difficult to obtain, a substitute may be made with card-board, tastefully covered with moss and lichens, sewed or glued on.

Answers to Correspondents.

BY THE DOCTOR.

I wish you would understand and try to remember that Aunt Sue and I are very different persons, and though we are very good friends, we neither of us care to get letters which should be sent to the other. Please do not ask Aunt Sue to tell The Doctor, or tell The Doctor to ask Aunt Sue this or that; we do not meet oftener than once a year, and such messages have to be sent by mail, and you can do that yourselves.

WHAT IS A FICE?—"A School Boy," writes from Salt Lake City—how these boys are scattered!—that one boy at school began his composition with "My little dog is a *fice*." The teacher and all hands were puzzled to know what a fice was, and the boy finding it in no dictionary applies to me. All I know about the word is, that I have heard it used a few times by people from the southern states, as I thought, to express contempt. I once went to school with a boy from Georgia, and I recollect hearing him tell another that he "acted like a fice," and he was surprised when I did not know that it meant some kind of a dog. Our Utah friend is right, it is not in the dictionaries, and I hope that some of my boys who live where the word is in use, will let us know what particular kind of a dog is called a *fice*.

ANCHOR ICE.—In my answer to "L. B.," in May last, I should have stated that the reason given for finding ice at the bottom of a stream was only one explanation, and that others accounted for it in a different manner. Now I have letters from some old folks who think that the explanation then given does not meet the whole case. The subject is too difficult for the Boys and Girls' Columns, and I shall have to attend to them as soon as I can, in another part of the paper.

HONEY DEW.—"A Farmer's Boy" writing from Sterling, Ill., says he finds that during summer nights a very sweet liquid collects on the leaves of trees, called honey-dew, and he wants to know what it is and what causes it.—It is merely sugar and water, but there is as much difference of opinion as to the cause as there is about the cause of anchor ice. It is well known that plant lice, (*Aphides*), which are found upon most plants and trees, have the power of giving off a sweet liquid; these insects have two little tubes at their tail-ends, from which they force out minute drops of this liquid, of which ants and other insects are very fond. As the ants go among the plant-lice and tickle them to make them "give down" this liquid, the lice have been called the ants' cows; bees too are very fond of it, and collect all they can find. It is claimed by some that honey dew always comes from these little insects, and that wherever this is found plant lice may also be found. On the other hand, some very learned men say that honey dew comes from the tree itself. The sap of trees contains sugar, and they say that under some circumstances this syrup is exuded through the pores of the leaves. It is not yet settled which is right, or if both are not right. Here is a case in which this "Farmer's Boy" and other farmers' boys and other boys can help. All the most learned scientific men do is to use their eyes and see what is before them; only they are very careful to be sure that they see correctly. Now let us have some observations. When you next find honey dew, note if it is on the leaves only on one side or on both sides; if on the upper side, examine the leaves above those upon which it is found, and see if there is any plant lice which could have dropped it. Look sharp, as they are small, and often green like the leaf. If on the underside, look for the lice there. Also look upon the plants, stones, or whatever may be under the tree, and see if there is any there. Also, what kind of trees have honey dew on them.—Have not space to answer your other question this time.

The 4th.

Yes, of course we believe in celebrating, especially this very 4th, which, if not the centennial, is within one of it. We wonder how many who work hard every year, and get so tired at celebrating, that at night they are glad that the 4th comes but once a year, ever think what it is all about. The next 4th of July after this, (1876), we all expect will be a rouser, because you know that it is the centennial. They are going to celebrate tremendously at Philadelphia, and everywhere more than ever before—because it is the centennial. You all know that the centennial has some reference to 100 years, and this being the year before, is 99 years since something. Why do we celebrate the 4th of July at all? Why celebrate the 4th any more than the 12th, which was the birth-day of Julius Caesar? Let's have all the fun we can, for we do not have so many holidays as they do in some countries, but before we try so hard to be happy, that we get very tired, why not stop to think what it is all about. We know that the bells ring, the cannon boom, and that crackers crack by day, and rockets go skyward by night. No one works, and every one gets very hot in doing something out of the usual way. Now what is it all about? Did you ever think what it was that you are celebrating? If not, let us hint what we think would be a good thing to do. Instead of buying crackers and powder, and other noisy things, and making it very disagreeable, look up the "Declaration of Independence," and read it. Get the boys together, and let the best reader of the lot read it aloud to the rest. Then talk it over and see how much any of you can tell what it all means. Why was that Declaration made, and what did it lead to? What was the government of the country before that, and what has it been since. This is a kind of celebration that the girls can join in too, and it would not be strange if some of them could tell all about it quite as well as the boys. This will be a capital preparation for the centennial which comes next year. Just think, a hundred years since that Declaration was written, and you may see what no boy or girl ever saw before, the 100th birth-day of the nation. The older ones among you should, before another 4th, read carefully, so that you can understand it, the Constitution of the United States, and know what people mean when they say such a thing is not constitutional.—But wouldn't we advise you to have any fun on the 4th? Certainly. Have all the games and frolic you can, but as we want all hands to be present at the great celebration next year, we would advise you to let pistols, guns, and powder alone. Do you know that in cities the 5th of July is a sad day? One takes up the paper and sees such a long list of accidents from powder, and sadly looks over it to see if any friend has lost life or limb by careless use of firearms, in his own or another's hands.—Let us try just this 99th celebration without powder, and see if we don't feel quite as happy and satisfied when bed time comes.

Aunt Sue Goes to a Spelling Match.

ELLIE M. S., wants to know "all about spelling matches."—Well, Ellie dear, "all about" is somewhat comprehensive; but I can tell you about one I attended at the Academy of Music, in Brooklyn; and I suppose they are "all" conducted on "about" the same principles. First thirty or forty girls, aged from 12 to 20, I should think, filed in, and were arranged on the long settees, which were placed in a semi-circle on the stage; then the lads entered and sat on the benches behind the girls; after them came the grown-up Reporters. The latter sat at the right of the stage, the school-children on the left. The Mayor of Brooklyn was present, and three or four other gentlemen. One of them announced that only English words would be given out; that if a word was spelled wrong by one person, others should spell it until it was spelled correctly. This rule gave great advantage to those who succeeded the first incorrect speller. Then Mr. H. S. took his position where audience and

scholars could hear him distinctly, and announced the words to be spelled. Two umpires sat on the stage, with Webster's dictionary for reference. Worcester's spelling was allowed, but Mr. Worcester was not represented, as his dictionary didn't happen to be present.

I was not on the stage, but I had paper and pencil with me, and as each word was given out, I wrote it down, and got along remarkably well until they came to "guerrilla," and I should have had to take a back seat at that, for I spelled it with only one *r*, which was very stupid of me, for I might have known it was derived from "*guerre*," the French for "war." As soon as the contestants spelled a word incorrectly, they either took a back seat, or went off of the stage entirely. Some of the Reporters were very funny about it; when they made a mistake they picked up their coats and hats, hid their faces with the latter, and *scooted*, amid the laughter of the audience. And so, one after another vanished, until about a dozen children were left. Then your Auntie's sympathies were aroused, and I longed to go and comfort each one as some "stumper" proved too much for him or for her, and he or she had to give up the contest. One little boy was amongst the last four—two girls and two boys—and he looked so sorry when at last he failed, that I felt nearly as bad as he did. Then the other boy missed, and back he went. The two girls kept it up for some time, but at last "Khan," (a Persian prince), fell to the lot of one of the girls, and she, unfortunately, spelt it "K-a-h-n;", of course the other reversed the a and h, and became the victor. The first prize was a large handsome Bible; the second, a large fruit cake, which fell to the lot of the little "Kahn" girl. I think these spelling matches are excellent institutions, but if I should get up a spelling match for my *Agriculturist* children, the first word I should propound, would be "NIECE," for fully half of my correspondents spell it incorrectly, "n e-i-c-e."

[We quite agree with Aunt Sue that spelling matches are good things, as you will see they were recommended to the old folks last month, on page 216, for they sometimes can improve their spelling as well as youngsters. The summer months are not favorable for such amusements, but we expect to see them start up again next fall, and be more numerous than ever. Aunt Sue very kindly sent us a list of the words given out at the famous Brooklyn match, and it contains most of the words that people spell incorrectly; this list will keep until the matches begin again; were we to publish it now, it would be lost sight of before it came time to use it. Wouldn't it be grand if Aunt Sue *could* get up an *Agriculturist* spelling match?—We should like to be there. ED.]

Can you Swim?

At one of the colleges a short time ago as the students were practising at rowing, one boat ran against and capsized another, and a fine young man was drowned. In reading of this we were reminded to ask our boys if they can swim. It seems very strange that any one should be training for a boat-race and not know how to swim. Every one of you who is large enough should learn to swim this very month. Of course you will talk with your parents about it, and not do anything that they do not think perfectly safe and proper. They no doubt wish you to learn, and at the same time may think that the place where you wish to go is not safe. So when we say boys and girls should do this or that, we mean always with the consent of their parents. No one who cannot swim should trust himself in a boat—indeed the need of being able to swim is so great that it is not necessary to argue the point. It is easier for boys to learn than it is for girls, but there is no great difficulty in the way if girls wish to learn, and they would feel much safer on the water if they knew that they could, in case of accident, keep themselves afloat. In learning, try to have some older person teach you. Some boys learn at once, while others are a long while about it. The writer learned in this way: there was a place in the river where the bottom sloped very gradually, and one could go out a long ways without getting out of depth. We would wade out until the water was up to our arm-pits, and then turn towards the shore and try to swim to it, knowing that we could touch bottom at any time. It took but a little while to learn. If the hands and all parts are kept under water, a person will float with the face out of water. It is well for those who cannot swim to remember that if they keep perfectly still they will not sink. At the swimming-schools they have a plan which any one can adopt. A band is fastened around the chest to which is attached a strong cord several feet long; the other end of the cord is fastened to a strong pole; the teacher holds the pole and directs the movements of the pupil, who is at the end of the line. A very little aid will keep one afloat, and a band made of stout cloth will answer the purpose. After the pupil learns to strike out properly while held up by the cord, he is gradually taught not to depend upon this. Watching the movements of a good swimmer will teach you more about using the hands and feet than anything that can be written. There are some rules that should always be observed: keep all parts, hands and feet, well under water, and do not be afraid to sink the whole body up to the chin: throw the head well back, and hollow the spine, or back-bone; this allows the weight of the head to come over the chest, which is the lightest part of the body. Learn to breathe through the nostrils; some swimmers make a great sputtering in throwing water from the mouth; it is easy to learn to swim with the mouth shut. Make every movement slowly and quietly; it is a great fault with beginners that they make hard work of swimming, and seem to think that they must make great exertions. Be quiet and you will find that swimming need not tire you any more than walking. Do not go into the water when heated, very tired, or after eating a hearty meal. Finally, when you get a chance, watch the best of all swimmers, and see how neatly and quietly he does it, and try if you cannot swim as well as—a frog!

A Wonderful Cat.

The Rev. J. G. Wood, who writes about animals and their doings, gives this cat story by a lady: Three years ago I had a lovely kitten given to me. Her fur was of a beautiful blue-grey color, marked with glossy black stripes, according to the most approved zebra or tiger fashion. She was so very pretty that she was named "Pret," and was the wisest, most loving, and dainty pussy that ever crossed my path. When Pret was very young, I fell ill with a nervous fever. She missed me immediately in my accustomed place, sought for me, and placed herself at my door until she found a chance of getting into my room, and began at once to try her little best to amuse me with her frisky kitten tricks and pussy-cat attentions. But soon finding that I was too ill to play with her, she placed herself beside me, and at once established herself as head nurse. In this capacity few human beings could have exceeded her in watchfulness, or manifested more affectionate regard. It was truly wonderful to note how soon she learned to know the different hours at which I ought to take medicine or nourishment; and during the night, if my attendant were asleep, she would call her, and if she could not awaken her without such extreme measures, she would gently nibble the nose of the sleeper, which means never failed to produce the desired effect. Having thus achieved her purpose, Miss Pret would watch attentively the preparation of whatever was needed, and then come, and with a gentle purr-purr announce it to me. The most marvellous part of the matter was, her never being five minutes wrong in her calculations of the true time, even amid the stillness and darkness of the night. But who shall say by what means this little creature was enabled to measure the fleeting moments, and by the aid of what power did she connect the lapse of time with the needful attentions of a nurse and her charge? Surely we have here something more than reason?

Nests and Eggs.

Do we think it right to collect birds' eggs and nests?—asks some one. Yes and no—and as a general thing for boys, no. We would not have boys make collections of birds' eggs, just as a matter of curiosity, or to see how many they can get. If a boy is old enough to study Ornithology seriously, then it becomes another matter, but birds are altogether too valuable to have their numbers diminished by a single one, without there are very good reasons for it. The fact that eggs are pretty, and that a collection of them makes a good show, is just no reason at all. All boys, and girls too, should do everything in their power to save and encourage the birds. Even those which take the cherries, and help themselves to strawberries, without waiting for sugar and cream, have been fed on insects when young. Each one has done good service in eating hundreds if not thousands of insects, brought by its parents before it left the nest; and now, after so long a course of animal food, it wishes a little fruit by way of change; it is only because it has fairly earned it. Some persons say that they had quite as lief that the insects would take the fruit in the first place, as to have the birds keep off the insects, and then eat up the fruit to pay for doing it; we don't agree to this, for we can, by a little trouble, frighten away birds, while no amount of scaring will send away insects. But we did not intend to discuss the usefulness of birds, but to say something about their nests. It is very interesting to see the various ways in which birds build their nests, and you can examine these after the brood has fledged and left as well as before, and you will not destroy any birds. Some birds are very careless about their nests, a few sticks and a little hay serving them, while on the other hand, other birds take great pains and weave them very carefully, and line them with the softest material they can get. Look at a King-bird's or Oriole's nest, and see what a wonderful piece of work it is—a regular bag, woven of all sorts of fibres, in the bottom of which the nest is placed. This is a very sociable bird, and likes to build near houses, and if you see any of the birds about, you can leave strings of various kinds where they can find them; when they leave the nest, you will find your strings all nicely woven in with other materials. One of the prettiest and neatest of nests is that of the humming-bird; these nests are not at all rare, though they are very seldom found; the body of the nest is made of the hairy down which grows upon the stems of some ferns, and then it is covered all over on the outside with lichens, (which are often incorrectly called mosses). The nest is usually built in an apple-tree, and looks so much like a lichen-covered knot that it is not often discovered. What a contrast with this is the daub of mud which the barn swallow puts up for a nest. Some birds hardly take the trouble to make a nest at all; a few sticks brought together being the whole. You will find it very interesting to examine the nests of different birds, and to notice the wonderful variety of ways in which they do the same thing—provide a place in which to hatch their eggs and rear their young.

July.

Why do we call this month July? Here we have to remember another ancient Roman; this time it is Julius Cæsar, and the month was named in his honor because he was born in it. This is better than naming a month after heathen gods and goddesses, for J. C., as every boy who has studied Latin knows to his sorrow, was a great general in his day, and his work describing his wars is one of the Latin school books. He was murdered by assassins, and almost every big boy has spoken the piece beginning "Romans, countrymen, and lovers! Lend me your ears," which Shakespeare makes Mark Anthony say over his body. Who thinks of Julius Cæsar now—he's nothing to the Fourth of July, for which this month is particularly remembered by all patriotic youngsters.

Saved by a Fish.—Sometimes a very trifling thing will do a great deal of mischief. Here is a story showing that a trifle may save a great many lives. The captain of the bark Providence, states that during his voyage to Dantzic, the ship sprang a severe leak, and his crew were all but exhausted in their efforts at the pumps to reduce it. One day she suddenly stopped making more water, and in time reached Dantzic safely. After the discharge of the cargo, a search was made for the leak, and a hole was found in the center of one of the after-planks, from the yielding of a knot in the wood; in this hole there was wedged a dead fish, which coming against the bottom of the vessel when alive, at just the spot where the hole was, had stopped the leak and saved the ship and crew.

Answer to Puzzle Picture 111, in May No.—To see the "Old Man of the Mountain," turn the picture so that the right-hand side will be the top. The trunk of the tree forms the outline of the top of the head; the bleak looking hills, his long hair; the distant fence makes the outline of the face and beard; the ear of the right-hand (now uppermost) sheep, the eye; the nose is formed by the space between the neck of one sheep and the tail of the other; and the ear and mouth by little marks not noticed when looking at the picture as it is placed in the page. We think the artist who did this will have to try many times before he makes a better puzzle picture than this "Old Man of the Mountain."

Aunt Sue's Puzzle-Box.

CHARADE.

A native of a foreign land,
One whom we often see,
Receives this name on every hand,
And this my first will be.

What do we all, from Childhood up,
At morning, noon and night,
Whene'er we breakfast, dine or sup?
My second answers right.

My third, one who, when George was king
And ruled with tyrant's sway,
To Freedom's cause did closely cling
In her most gloomy day.

In eastern wilds there grows a plant
Which yields a perfume sweet,
Although in outward beauty scant:
Behold me now complete. HENRY.

SQUARE WORDS.

1.—1. Circumstance. 2. Powerful. 3. A clique. 4. To contribute. HERBERT J. K.

2.—1. A title. 2. An ornament worn by a high priest. 3. Animals. 4. A large bird which cannot fly. MOCKING BIRD

CROSS ACROSTIC.

The center letters, horizontal and perpendicular, name a county in Pennsylvania.

1. An animal. 2. Depravity. 3. Was a Jewish priest. 4. Affectation. 5. Mountains in the United States. 6. A point of the compass. 7. A boy's nickname. 8. A boarding-house. 9. An answer. STAR STATE.

EVIDENCES OF GUILT.—*Engraved for the American Agriculturist.*

CROSS WORD.

My first is in poet but 'tis not in verse,
My next is in package but 'tis not in purse,
My third is in primrose but 'tis not in pink,
My fourth is in paper but 'tis not in ink,
My fifth is in porcelain but not in a mug,
My sixth is in camphor but not in a drug,
My seventh's in regal but not in the Queen,
My eighth is in homestead but not in demesne,
My ninth is in songstress, delightful to hear,
My whole will complete a far-famed one—
in clear. M. E. P.

NUMERICAL ENIGMAS.

1. I am composed of 13 letters:
My 2, 5, 11, 9, is the name of a river in the U. S.
My 6, 7, 8, 4, is a vehicle.
My 13, 12, 1, is a girl's name.
My 6, 2, 10, 9, 3, is a beauty caused by the sun.
My whole is one of the United States. ELLA G.

2. I am composed of 30 letters:
My 18, 8, 23, is an animal.
My 14, 6, 16, 30, is an article of clothing.
My 2, 19, 5, 28, is a bird.
My 25, 4, 23, is a receptacle.
My 10, 1, 27, 17, is baked in the oven.
My 21, 26, 9, 13, is a fruit.
My 11, 29, 12, 3, is always very cold.
My 24, 20, 22, 7, 15, may vary in price (though of the same size) from nothing to a thousand dollars and more.
My whole is a well-known proverb.

3. I am composed of 36 letters:
My 1, 2, 6, 3, 28, 22, 18, 9, 23, is a reptile,
My 4, 26, 7, 8, 36, 30, is a part in music.
My 14, 15, 25, 29, 34, 35, 28, 21, is complete.
My 20, 19, 31, 32, is tidy.
My 33, 5, 7, 27, 12, 11, we should all be.
My 1, 10, 13, 24, 30, is a kind of mud.
My 16, 17, is a preposition.
My whole is a quotation. DENVER C. T.

PUZZLE.

Take five hundred and fifty, One hundred and nothing,
And put them in order together,
A word you will find, which I think I may say
Is often applied to the weather.

WILD-FLOWER ANAGRAMS.

1. I bit Ursula Grant.
2. O lone molasses!
3. Friend Cora Wall.
4. About Mayweed.
5. Lo! Ann died.
6. Eloise Frost.
7. A sure hat.
8. Lord Ogden. M. G.

ANAGRAMS OF THE NAMES OF THREE CELEBRATED PHILOSOPHICAL WRITERS.

Cool ye black bone. CARTER.

ANSWERS TO PUZZLES IN THE MAY NUMBER.

ANAGRAMS.—1. Unconsidered. 2. Contusions. 3. Bludgeons. 4. Encompassed. 5. Ingredients. 6. Aforesaid. 7. Redundancy. 8. Accomplished. 9. Diffuseness. 10. Parliamentary.

BIBLE EXERCISE.—Abner. Bathsheba. Chloe. Damaris. Eschol. Felix. Gihon. Hiram. Iscariot. Jacob. Kirjath-Jearim. Lycaonia. Nathaniel. Obadiah. Paul. Rhoda. Smyrna. Trophimus. Uzziel. Vashti. Zachariah.

CHARADE.—Mayor; May—or.

NUMERICAL ENIGMAS.—1. Truth is mighty and will prevail.—2. Washington.

ACROSTIC.—1. Lewellyn. 2. Eddy. 3. Alexander. 4. Rankin. 5. Nautical 6. Turtle. 7. Otho, Greece. 8. Knife. 9. Nerve. 10. Ogdensburg. 11. Wasp. 12. Trite. 13. Hornet. 14. Yell. 15. Stocking. 16. Engraving. 17. Lithograph. 18. Firth.—Learn to know thyself.

CONCEALED STATES AND COUNTRIES.—1. Peru. 2. Ireland. 3. Ohio. 4. Oregon. 5. Siam. 6. Idaho. 7. Spain. 8. Iceland.

DECAPITATION.—Shaft, haft, aft.

CROSS WORD.—Arabian Night's Entertainments.

PI.—Happy is he who can take warning from the mishaps of others.

SQUARE WORDS.—1.

A	S	T	E
S	T	O	V
T	O	K	E
E	V	E	N
R	E	N	T
S			

2.

S	P	A	I
P	R	I	D
A	I	S	L
I	D	L	E
N	E	E	D
Y			

Thanks for letters, puzzles, etc., to M. Jennie H., Mechanic, J. A. McG., R. D. Gage, Alpha Beta, Sphinx, (such a generous lot, so nicely prepared and so modestly offered!), J. F. W., Harry L. S., Effie Y., and S. Martin.

Send communications intended for Aunt Sue to Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.

Oh yes, master Tip, you think you have done a fine thing, don't you? You know that you have been in mischief, your face shows it just as plainly as if you could speak. Yes, sir, and what is worse, you don't look a bit sorry. If you were a poor starved cur, there might be some excuse for you, but when you are properly fed, to go and just out of mischief kill the old hen is too mean even for a dog.—When we saw this picture, the first thought was, that is a picture that will please a great many of our *Agriculturist* boys and girls; so we had it engraved, and here it is. Even those too young to read can understand what the artist meant to show, and older ones will admire the cleverness with which it is done. It is said that animals have no reason, but they must have something very much like it. Did you ever notice the different expressions in dogs, and how differently they look when they have done something for which they expect praise, from what they do when they know they have done wrong, and deserve a scolding, if nothing more? The dog in the picture has an amusing expression, as if he pretended to know nothing about what had happened to the old hen, at the same time he is chuckling over the nice meal she made. Then the poor little orphaned chickens, how their distress makes a sad side to the picture, and contrasts strongly with the "I don't care, I am glad I did it, only I hope I won't get found out," written as plainly on the dog's face as can be.—"Found out"—master Tip—such things are always found out. Smart as you think you are, you are a very stupid dog. You havn't sense enough to remove those tell-tale legs, which show as plainly as can be what has become of the old hen. You'll catch it—and you deserve it, too.—It is just so not only with dogs, but people who do wrong; yes, and young people, too. They think that they can do some forbidden thing, and not be found out—their cunning lasts while they are doing it, but they are sure to leave the *legs*, or some other silent witness, in sight.

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Flat Dutch, Drumhead, Marblehead Mammoth, Stone Mason, Fottler's Improved Brunswick, Winningstadt, Savoy, Red Dutch, Bergen. 40c. per 100; $3 per 1,000; $25 per 10,000. 75c. per 100 by mail. Edward Burgess, Poughkeepsie, N. Y.

Cabbage and Celery Plants.—Premium Flat Dutch Cabbage plants, 50c. per 100; $1 per 1,000; lots of 5,000 and upwards, $3 per 1,000. **Dwarf Imperial** and **White Solid** Celery, 75c. per 100; $5 per 1,000; for lots of 5,000, $4 per 1,000. Address
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Standard sorts, 75 cents per pound, free by mail. Descriptive Price List free.
J. B. ROOT, Seed Grower, Rockford, Ills.

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offers an excellent stock of **Ornamental Foliage Plants,** in fine condition for Summer and Fall use.
Small plants sent by mail to all parts of the country.
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For spring of 1875 will be ready in February, with a colored plate; Free to all my customers, to others price 25 cts.; a plain copy to all applicants free. Washington City, D. C.

Kill the Bugs & Worms,

And Save the Potatoes and the Cotton Crop.

SURE DEATH to the Potato Bug and Cotton Worm is only to be had by the use of Paris Green. Prof. Cook and others say it is the only certain remedy.

PURE PARIS GREEN,
Manufactured specially and for sale by
F. W. DEVOE & CO.,
Manufacturers and Importers of White Leads, Zinc White, Colors, Varnishes, and
ARTIST'S MATERIALS,
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☞ Special attention paid to large orders and liberal discount made. Granges and Farmers' Clubs should take note, and every farmer ask his merchant for Devoe's Paris Green.
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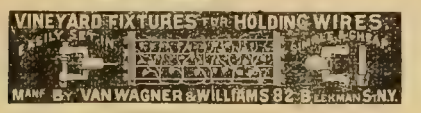
Lice, Flea, Worm, Slug and *Caterpillar* DESTROYER, thoroughly DUSTS the crop with Paris Green, or other poisons, *at the speed of a walk, safe and easily operated by a boy.* Sent pre-paid, by mail for $6.50. Circulars free. Made only by S. L. ALLEN & CO., 119 So. 4th St., Phila. PARIS GREEN *supplied.* LIVE AGENTS WANTED.



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No Belts, Bellows, or Cranks, the Best Made.
Send 3c. stamp for Catalogue to
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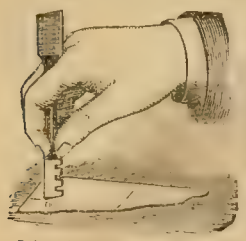

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Cuts glass better than a diamond. Everybody should have one. Any child can use it. Sent to your address on receipt of 50c. and stamp by
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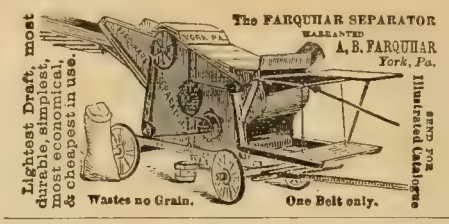

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(Improved and perfected for season of 1875.)

This machine will do the work of ten men.
It is the lightest draft machine ever built, one horse working it easily.
It has taken first premiums wherever exhibited.
Send for a descriptive circular.
The Superior Spreader is unsurpassed in beauty, workmanship, and durability.
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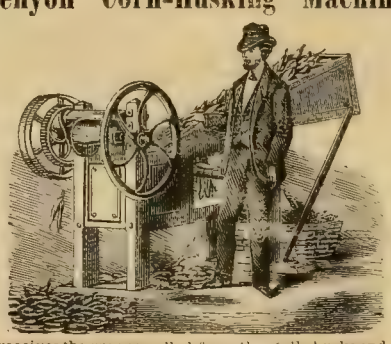
THE HIGGANUM MANUFACTURING CO., Higganum, Conn.

RUFUS L. COLE, Produce Commission Merchant, 111 Reade St., New York. *Established in* 1852. Market reports and shipping directions sent *free* on application.

Kenyon Corn-Husking Machine.



It receives the ears as pulled from the stalk, husks and silks it perfectly clean. This machine husks rapidly, propelled by horse or hand-power. Machines supplied from Huntington Machine Works, 135 Halsey St., Newark, N. J.
S. R. KENYON. } Send for Descriptive Circular.
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Manufacturers of

BROOM MACHINERY

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FARM MACHINERY, SEEDS,
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This water proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.
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B. F. RANDELL'S
Grain Separator,
CLEANER and GRADER.

THE ATTENTION of the Farmers is respectfully called to B. F. Randell's justly celebrated Improved Fanning Mill, Seed Cleaner, Grain Separator and Grader combined, a recent invention which has attracted very marked attention throughout the Central and Western States, where it has been introduced, and which is now being manufactured for the EASTERN States, at Auburn, N. Y., and Harrisburg, Pa., as below.

Until the invention of the "Randell Grain Separator" all machines for cleaning grain known as "Separators," have been at the best mere SEED CLEANERS, too expensive for general use and altogether too slow, complicated and impracticable for the general purposes of a fanning mill. Therefore, for the information of those who are looking for something cheap, rapid and practicable, the undersigned respectfully submit the following extracts from testimonials of farmers and grain men to the merits of the Randell Improved Seed and Grain Cleaner or Separator and Grader.

FROM THE WELL-KNOWN FARMER, ALFRED HALE, OF LYONS, N. Y.

"This 26th day of May, I tested the RANDELL SEPARATOR in my Granary, and it proved to have important advantages over the present Fanning Mills; so much so that I gave my order for one, notwithstanding I have at this time two of the other mills. ALFRED HALE."

"It is the only real Separator, Cleaner and Grader in the United States.

"It works upon the principle of GRAVITY, an entirely NEW PRINCIPLE in grading grain, which gives the farmer perfect control of Cleaning, Separating or Grading his grain, and works to perfection.
JOHN HOFFER, Paxton Mills, Harrisburg, Pa."

FROM FARMER MURDOCK, AUBURN, N. Y.

"The Randell Separator is the first and only machine I ever saw that could separate OATS from BARLEY, or SPRING WHEAT, with any kind of expedition. It is not a mere fanning mill, nor a mere seed separator for cleaning Timothy or Clover, or fitting grain for seed, but both, combining the rapidity of the fanning mill with the perfection of a separator. A. R. MURDOCK."

"The Randell Separator is constructed upon an entirely new principle of taking advantage of gravity, whereby the farmer is enabled to separate Oats from Wheat or Barley rapidly for market, and at the same time get a grade of the soundest and heaviest kernels, pure of Oats and Cockle for seed.
ORLANDO LEWIS, Stone Mills.
NEYHART & CO., Empire Mills,
SERVIS & CO., Premium Mills."

Some time during this season each grain county will be canvassed by competent salesmen, who will exhibit the working of the machine and take orders for next fall's delivery. To avoid any mistake, remember the name of B. F. Randell will always appear on the drum of his "Separator."

☞ Be sure and read editorial in the COUNTRY GENTLEMAN of May 13th.

Agents wanted for all the counties in the State.—Price $36 delivered on cars, and liberal discounts to agents.

We think it but the strictest justice to YOURSELVES, that we ask you to withhold your purchase of other mills, till after you have first seen and tested for yourselves this wonderfully RAPID, SIMPLE and COMPLETE MACHINE.

For Circulars, for the State of N. Y., address the Randell Grain Separator Co., **Auburn, N. Y.**

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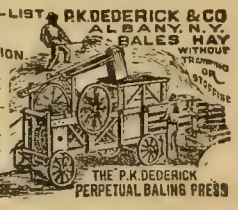
ADDRESS FOR PRICE-LIST AND DESCRIPTION. P. K. DEDERICK & CO. ALBANY, N.Y.



Requires but two horse power; and bales either hay or cotton without tramping or stopping. Thirty bales of hay per hour. Twenty bales of cotton per hour.

Beecher Baskets.

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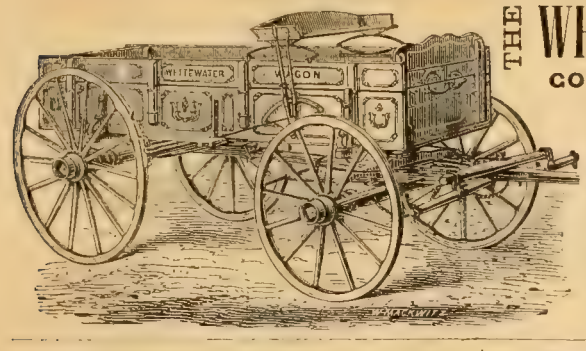

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For general Farm, Plantation and Freight purposes. Also Spring Wagons. They have for many years stood the climatic tests of every part of the country, and on account of their quality of material and workmanship, are now used for the public service by both the United States and Canadian Governments. They may be found in the principal markets of the country, and at prices to compete with strictly first-class work. All timber seasoned two years before use. Iron heavier than any competing wagon. Style and finish very superior. The peculiar feature of the skeins gives lighter draft than any other wagon. Send for Catalogue and prices. WINCHESTER & PARTRIDGE M'F'G CO. Works at Whitewater. Address

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The sole Eastern agency of these celebrated wagons is with

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Where samples can be seen at all times, as well as a full assortment of **Agricultural Implements, Machines, Seeds and Fertilizers.**

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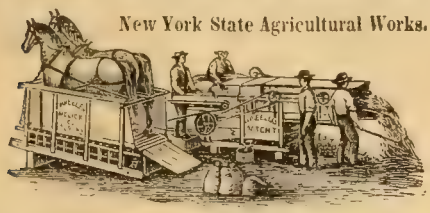
New York State Agricultural Works.



WHEELER & MELICK CO.,

Patentees and Manufacturers of
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ALL REAPERS and *MOWERS* should have the *HARRISON RUBBER LINED KNIFE HEAD ATTACHMENT.*

It diminishes their *draft* at least *one-third* and adds greatly to their *durability.* It almost entirely obviates all *wear, friction,* or *jar,* causing the machine to run without *noise, breaking* of *knives,* or *clogging.* Send for descriptive circular to HARRISON MAN'F'G CO., Lansing, Mich.

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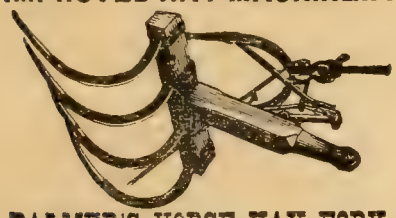
MANUFACTURERS & DEALERS IN

IMPROVED HAY MACHINERY



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Harder's Premium Railway Horse Power, and Thresher and Cleaner, awarded

TWO GOLD MEDALS

For *"Slow and easy movement of horses, 15 rods less than 1½ miles per hour, Mechanical Construction of the very best kind, thorough and conscientious workmanship and material in every place, nothing slighted, excellent work, &c.,"* as shown by Official Report of Judges. Threshers, Separators, Fanning Mills, Wood Saws, Seed Sowers and Planters, all of the best in Market. Catalogue with price, full information, and Judges Report of Auburn Trial, sent free. Address MINARD HARDER, Cobleskill, Schoharie Co., N. Y.

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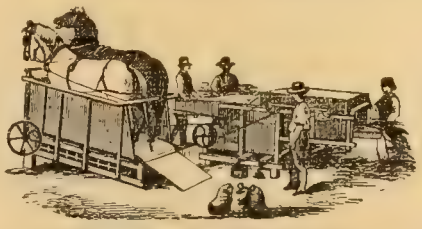
1854.  1875.

The Peerless Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—Grain Fans and Corn Shellers. Our machines have received the highest testimonials and cannot be excelled.

B. GILL & SON,
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for your own use (or the agency for) the cheapest and best Hay, Straw, and Stalk Cutters, in America—hand or horse-power. Not to be paid for till tried on your farm and found satisfactory. Circulars free.

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FOUST'S HAY LOADER. Improved for 1875, including Wind-Break Attachment. Warranted to pitch a ton of hay from the winrow in five minutes, and take it as clean as by the hand fork. Adapted to all ordinary meadow land, and to any farm wagon. Manufactured by STRATTON & WHITE, Agricultural Works, Meadville, Pa. **Send for Descriptive Circulars early.**

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From 1 to 200 Horse-Power.

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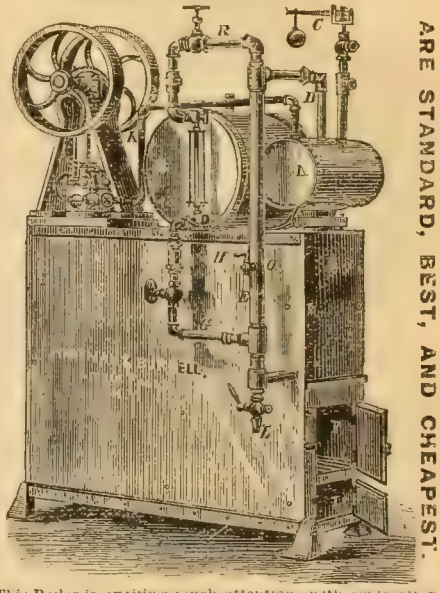

ARE STANDARD, BEST, AND CHEAPEST.

This Boiler is exciting much attention with contractors and expansion perfectly provided for, and a *perfect circulation,* it is pronounced by experts the best Boiler ever invented. One has been already engaged for the **Great "Centennial Exposition,"** to furnish power for one department. For Anderson Boilers, **both the upright** (as heretofore advertised in this paper) and the horizontal pipe Safety Boilers, apply to

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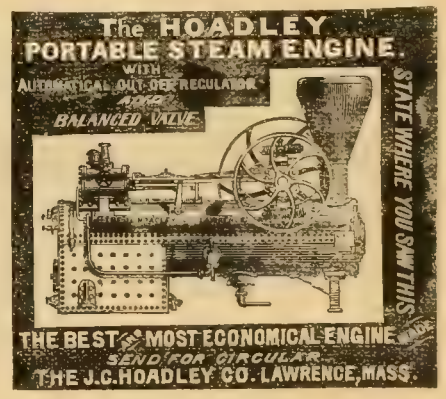

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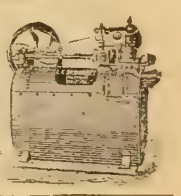

2 to 8 H. P. New Location, and cheaper freights to all parts of the country. Over 300 in use.

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BEFORE BUYING ANY OTHER.
Send for Circulars.

Address all orders to } **W. H. BANKS & CO.,** Northwestern Agents,
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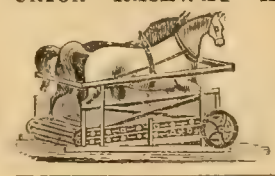

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Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for Roads and for CONCRETE, &c.

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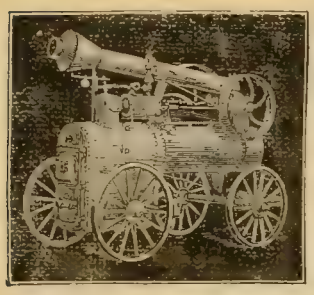

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Real Estate purchased, managed, and sold on commission. Large properties a specialty. Money loaned on Real Estate. All money transmitted through the banks.

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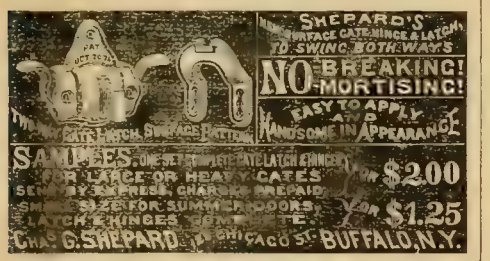

The Champion Fruit-Drier is what every Farmer wants, or should have, for drying his own Fruit. Price, with tin roof stove, everything complete, $25.00. Send for Circular. Please send stamp
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Stereopticons of all sizes and prices, for parlor entertainments and public exhibitions. ☞ Pays well on small investments. ☞ Catalogues free.
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GAME FOWL, Carrier Pigeons, and **Sporting Dogs,** bred and shipped by J. C. COOPER, Cooper Hill, Limerick, Ireland. Winner of Gold Medals at Paris and New York.

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THE BEST RUSTIC GOODS EVER MADE

HANGING BASKETS—STANDS—BRACKETS—CROSSES—SETTEES—CHAIRS.

Pot Stands, **our new design**, for ½ gallon and 1, 2, and 4 gallon pots. **Just the thing for Porticos, Lawns, and Cemeteries.** ☞ **ALSO MANUFACTURERS OF RED CEDAR LABELS.**

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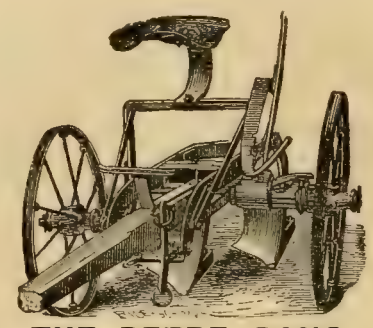

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OFFICE OF LANDRETH'S SEED WAREHOUSE, 21 & 23 South Sixth St.
(*Founded* 1784.)

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Gentlemen:—The trial of your Gang Plow on our plantation in Virginia has been very satisfactory. The first day we took it out we turned down almost five acres in ten hours, using three mules. The sod a sandy loam and the plows running six inches deep. On another occasion we plowed an acre and a fraction in less than two hours.
The Gang has acted so well that we have determined to order one for our farm in this state, and may, if it succeeds equally well, want a number.
Ship a Gang similar to the first.
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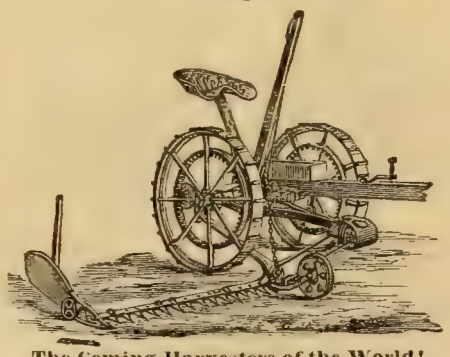
Moline Plow Works, Moline, Illinois.

WM. ANSON WOOD'S IMPROVED
Mowers & Reapers for 1875.



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For one or two Horses. Low cut, light draft, simple, strong and durable.

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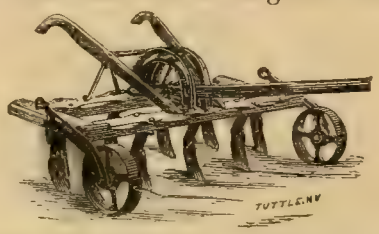
For all conditions of grain—lodged or standing. Lightest, Cheapest and Best in use.

Eagle Mowing & Reaping Machine Co.,
☞ Send for Circular. **Albany, N. Y.**

The American Pulverizing Cultivator



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E. & O. WARD, PRODUCE COMMISSION MERCHANTS.
(Established 1845.) **No. 279 Washington-st., N. Y.**
Reference, *Irving National Bank.*

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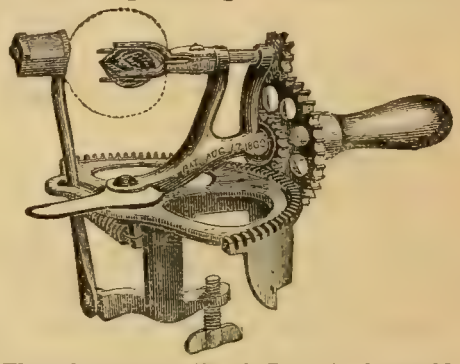

The only practical Peach-Parer in the world.
Gives universal satisfaction. Sold in all large markets. Send $1.50 for sample.

GOODELL COMPANY,
Sole Manufacturers,
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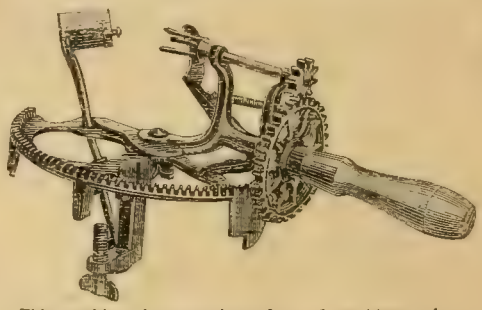

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 251.

Short-horn Breeders' Convention.—The Short-horn Breeders' Convention was held at Indianapolis on the 26th of May. The attendance was good, and several papers of great interest were read.

Black-faced Scotch Sheep.—"P. M. B.," Dixon County, Neb. It would hardly be advisable to go to the expense of importing the black-faced Highland sheep, although they are hardy and prolific. A cross of the Cotswold upon our common native sheep would be as good a breed for our purposes as the Scotch, and by a few years careful breeding a very useful sheep might be established.

Parvin's Steam Motor.—"J. K.," Marshall Co., Kansas. The steam motor of Parvin is not a plow, but simply a locomotive engine to draw plows. We suspect it is not a success, as we hear of none being in use. A steam plowing engine that is practically successful upon other lands may very probably fail upon prairie soils that are wet, sticky, and slippery, and where sloughs have to be passed through. And this is the difficulty that so far has not been overcome. A plowing engine with plows costs $8,000 or over.

Poultry Raising.—"Subscriber," Jacksonville, Fla. Keeping poultry in flocks of 400 or 500 is not a safe business for a new beginner. It is safer to begin with 50 and gradually increase as knowledge of the business is gained. Poultry-houses suitable for a large business are described and illustrated in the *Agriculturist* of June, 1873, and June, 1874. These houses should not be increased in size, but in number to suit the size of the flock. The Brahma is the best fowl for all purposes. One acre is needed for every 100 fowls.

Scours in Calves.—"P. Y.," Walworth Co., Wis. A remedy for scours in calves is an ounce of carbonate of magnesia or prepared chalk, mixed with half a pint of water, in which a teaspoonful of flax-seed has been boiled, and a little essence of peppermint added. It may be given before feeding in the morning, until the diarrhœa is stopped.

Cheese Factories in Illinois.—J. S. Hatch, Kendall Co., Ill., writes that he has just started a cheese factory, and that the following factories are running in his neighborhood. Two, besides the one mentioned at Little Rock, one at Plano, one at Sandwich, one at Somonauk, one at Freeland, others at Sugar Grove, Montgomery, Hinckly, and elsewhere, and all within a radius of ten miles. This is very encouraging, and points to an improving condition of agriculture in that district, which is worthy of imitation elsewhere. The increasing demand for cheese will make many more factories necessary, and there is great room in the west for them. We shall be glad to hear again from Mr. H.

"Braxy," or Anthrax Fever in Sheep.—"S. J. H.," Alabama. This disease is similar to black-leg, or quarter-ill in calves or cattle, and cholera in hogs. It is a blood disease, resulting sometimes from over feeding; in this case probably too much cotton-seed has caused it. The lameness and stiffness in the hinder parts, constipation, with dark colored and deficient urine, bright staring eyes, carrying the head up and to one side, and grinding of the teeth, are constant symptoms of this complaint. There is no remedy if the latter symptoms have appeared. Four ounces of epsom salts should be given as soon as the ailment is discovered, and afterwards 20 grains of salpeter daily, for a week. Injections of warm soap and water or linseed oil, should be given until the bowels are relieved.

Feeding for Milk.—"C. G. T.," Clinton Corners, N. Y. A very good feed for milch cows is two quarts of corn-meal and two quarts of wheat, or rye, bran, or shorts, twice a day. Where brewers' grains can be procured cheaply, or less than 15 cents a bushel, they are very productive of milk. Half a bushel of grains and three quarts of corn-meal twice a day, are fed in some milk dairies with profit, when milk is four cents a quart. When malted corn has been used in the brewing along with the barley malt, the grains are much more valuable.

The Best Cows.—"J. B. M.," Hagerstown, Md. The best dairy cow for family purposes, is a high

grade (three-quarters or seven-eighths) Jersey, from a really good native cow by a Jersey bull, from good milk and butter stock. Such a cow may be expected to yield a pound of butter a day, on an average, for nine months in the year, or about 280 pounds of butter a year. We have had several such cows that have done better than that. The best dairy book is Flint's Milch Cows and Dairy Farming, price $2.50. For general dairy purposes the Ayrshire, Short-horn, and Dutch breeds, and their grades or crosses are highly valued.

Sales of Short-horns.—The sales of Short-horn cattle which have occurred during the past month have amounted to 376 head, for an aggregate of $178,300. Of the six herds disposed of, four were sold at Dexter Park, Chicago, which from its central position in the vicinity of the Union Stock-yards, has become a favorite locality for both sellers and buyers. The sales at Dexter Park were not so well attended as former ones. The sales were as follows: by

L. W. Towne	29 cows	for $20,095;	average, $624.
	11 bulls	" 2,390;	average, 218.
J. P. Sanborn	43 cows	" 19,950;	average, 454.
	10 bulls	" 1,685;	average, 168.
Avery & Murphy	63 cows	" 39,140;	average, 621.
	12 bulls	" 11,045;	average, 920.
J. R. Shelby	78 cows	" 29,235;	average, 375.
	12 bulls	" 1,410;	average, 120.

The herd of Chas. Lowder was sold at the State Fair Grounds, Plainfield, Ind., for very low prices.

46 cows brought $7,700; average, $171.
19 bulls " 2,045; average, $107.

General S. Meredith & Sons' sale was held at Cambridge City, Ind., and very good prices were obtained; over 2,000 persons were present.

42 cows sold for $41,140; average, $980.
11 bulls " " 2,835; average, 257.

Two cows, Mazurkas, were bought by an English breeder for $5,600. Mr. A. J. Alexander, of Kentucky, has sold at private sale to go to England, two cows of the Duchess family for $35,000, and one Duke bull for $12,000.

Patent Machines.—"J. T.," La Crescent, Minn. No person may lawfully make any patented implement even for his own use, without a license from the owner of the patent.

"Walks and Talks" Correspondence.

NO PAY REQUIRED.—"C. A. D.," of Mass., asks me several questions, and says: "please answer and send price for your trouble."—The *Agriculturist* pays me for my trouble in answering these questions, and "C. A. D." pays the *Agriculturist* when he subscribes for the paper. But to the questions: The first is in regard to

HENS IN THE ORCHARD.—"I have got two orchards, half an acre each, trees 15 to 20 years old. Keep 300 hens. Would you fence in the orchards and keep the grass out, and let the hens run in them?"—If this was a convenient arrangement I should certainly do so. But I should not do it simply for the purpose of enriching the land. The food you furnish the hens will enrich the land just as much as if it was fed to sheep or swine—and no more. The insects which the hens catch on the wing would be so much gain, and if the hens pick up worms which would otherwise leave the orchard, that is a gain also. Otherwise I think the hens are no better manure-makers than cows, horses, sheep, or swine.

MANURE FROM A SLAUGHTER-HOUSE.—"C. A. D." lives five miles from a slaughter-house "where they kill hogs and make some very good manure. They take the offal and the heads, and cook them for the oil, and what is left they sell for $6 per cord. If you were going to use it, would you work it up with vitriol?"—I think not. I should draw out my barnyard manure in the winter to the field where I intended to use it, and draw the slaughter-house manure at the same time, and put them together in a pile. Make the pile 7 or 8 feet wide, and 6 feet high, being careful to build up the sides straight, so that the heap shall be nearly or quite as wide at top as at the bottom. If possible finish the heap up to the desired hight every day, and not spread it over a long heap where it will be likely to freeze before morning. The slaughter-house manure will greatly favor fermentation, and you can use it in this way to great advantage. Turn the heap when necessary. The soil below the heap will not be frozen, and you can dig up a foot or so of this soil and mix it with the manure, or put it on top. I have been using several large heaps of manure this spring for root crops and for potatoes, which were drawn to the field last winter and piled—it was in capital order. But be sure and keep the sides up straight, and not drawn in like the roof of a house. In the latter case the wind and frost will go through the narrow top and freeze it solid. If well built it will ferment slowly all winter, and be in prime order for use in spring.

"HOW WOULD YOU USE THE BLOOD?"—Add it to the heap of manure. It is a rich fertilizer, and will greatly aid the fermentation of the manure. There is no danger from excessive and injurious fermentation in the winter. In fact the difficulty with cow manure is to get it to ferment at all, and to keep out the frost from the heap.

MORE GRASS AND LESS WHEAT.—This is what a young farmer in Cumberland Co., Pa., wants. He has bought a farm of 150 acres, two miles from a railroad station; large bank-barn and other buildings, for $5,000. The land was all limed 12 years ago. He can buy lime at 8 cents a bushel. The rotation previously adopted on the farm was, 1st., corn on two or three year-old clover sod. 2d., oats. 3d., wheat. 4th., wheat again. 5th., clover. Average yield, wheat 10 to 12 bushels, oats 20 bushels, corn 20 to 25 bushels per acre.—This will not do at all. There is no profit in such farming. Lime and clover must be the basis of improvement. Give up the second wheat crop. If the land is foul, I should try how it would answer to "fall-fallow" a clover sod and sow it to oats the next spring, and seed down with clover. Barley would be better than oats, and with lime so cheap, it would seem not a difficult matter to raise barley on a fall-fallowed clover sod dressed with 100 bushels of lime per acre. Such treatment ought to give 40 bushels barley per acre, and a grand crop of clover afterwards. A clover sod, pastured until June, or July, might be broken up, and the surface soil thoroughly worked afterward four or five inches deep, with a cultivator and harrow. Then lime it and sow wheat, and seed down with timothy in the fall, and clover in the spring. If the land is thoroughly worked and limed, I should not only expect a fair crop of wheat, but a good crop of clover afterwards. Clover sometimes fails on clover sod, but it is generally because the land is not well worked. By raising more grass or clover, you can keep more stock, and if you get good stock, you can afford to buy bran and oilcake, and thus make rich manure, and then you are through with your difficulties.

CLOVER FOR HOGS.—"T. A.," Hawk Point, Mo., writes: "I have six acres of clover and six acres of oats. Will this keep 30 pigs, which are intended for fall market?"—I suppose Mr. A. intends to let the pigs pasture on the *oats* as well as on the clover. I have had no experience with oats as a pasture for pigs. I should think it would be better to confine the 30 pigs to the 6 acres of clover, and feed them corn in addition. The corn should be fed regularly, say morning and night—and always at the same hours. If fed irregularly, the pigs will be looking for it all the time, and will not eat much clover. If you feed the corn in the ear, I would take it to different parts of the field, and not feed every day in the same place. The corn would be better, I think, if shelled and soaked in water for 24 hours before feeding.

SENDING STOCK BY EXPRESS.—"D. S.," Ind. The express companies charge more for carrying live stock than for ordinary merchandize. For a box of pigs weighing less than 100 lbs., they charge *double* the regular rates; for a box weighing over 100 lbs., one and a half the regular rates. Thus from Rochester to Indianapolis, the regular rate is $3 per 100 lbs. For a pair of 2-months pigs, weighing, with the box, 85 lbs., the charges would be $5.10. For a trio of pigs weighing 115 lbs., the express charges would be $5.17. Sliced mangels make excellent food for them on the journey, as they furnish both food and water. I have shipped several hundred to different parts of the country—some to Texas, Louisiana, Arkansas, Mississippi, etc., and never lost a pig on the journey. I have no fault to find with the express companies, except that they charge more for stock than for dry goods. For a year or more the American Express Co. carried my stock at the same rates as ordinary merchandize, but the U. S. Co. objected to their doing so, as being contrary to an agreement between the two companies. Both companies now charge alike, there being no competition; but they take excellent care of the stock, and carry them through on their fastest trains. The stock often reaches its destination two or three days before a letter mailed at the same time. On the whole we have not much to complain of.

MAP OF A FARM.—John Landreth, Manitowoc, Wis., in answer to some questions of mine in regard to his farming operations, sends me a printed map of his farm. It is a capital thing to have. The fields are all numbered, and the length and breadth are noted on the map, with the number of acres.

GETTING OUT STONES.—Mr. L. is trying, like myself, to free his land from stones. He draws them four miles to the harbor at Manitowoc, getting pay for them, and drawing back a load of manure. This is a good thing to do, too. Mr. L. tells me of a plan which I shall try to get adopted on my own farm. He says: "In plowing last fall we strapped on each plow handle pieces of shingles two inches wide, and where a stone was struck, and could not be moved by the plow, a shingle was stuck in, marking the spot, and a man with spade and bar followed at intervals and brought them to light. In this way our land to-day is clean, and not a stone or stump to be seen on 110 acres of last fall's plowing, and our gang-plow, drill, and other labor-saving implements can be safely used."

ROLLING COULTER PLOW.—Mr. L. speaks very highly of the large-rolling Coulter Plow, and also of Crossley's Gang Plow. I am not acquainted with either, but have never yet had a Gang Plow that was satisfactory. I have one which does not draw true, and the result is that the last plow takes a very narrow furrow. It is made of cast-iron, and there is no way to change the line of draft.

GROWING RUTA-BAGAS.—"A. F. G.," Barry Co., Mich., has eight acres of land, two of which are occupied with the house and gardens. Of the other six acres, one acre is good strong land, and the rest sand and gravelly clay. He finds ruta-bagas and onions his best paying crops, and he wants me to tell him how to manage to grow ruta-bagas. Last year he sowed three acres and kept the land clean, but owing to the drouth had only 100 bushels per acre. He can buy 50 loads of manure in town, and keeps one horse and one cow.—Onions will do well every year on the same land, provided it is well manured and kept clean. But ruta-bagas do better in rotation with other crops. Still, they *can* be grown year after year. In such a case, I should plow the land in the fall after the turnips were off, and draw out the manure in the winter and pile it in the field, and to each load or ton of manure add 100 lbs. of bone-dust scattered on, or slaughter-house manure, or, instead of this, sow 300 lbs. of superphosphate of lime in the drills at the time of sowing the seed. If you must confine yourself to these two crops, onions and turnips, I think it would be well to make the land very rich for onions with well-rotted manure, and then sow turnips on this land the next spring, using 300 lbs. of superphosphate to the acre—and if possible drill it in with the seed. The superphosphate will give the young plants a rapid start, and soon push them out of reach of injury from the little black beetle. You ought to raise from 800 to 1,000 bushels per acre. Sow in rows 20 inches apart, and thin out to 10 or 12 inches in the row.

VALUE OF BRAN FOR MANURE.—"A. B. F.," Columbia, Conn., writes: "When speaking of bran in 'Walks and Talks,' what quality do you mean? We have in our markets a very coarse quality called 'shorts'; a very fine grade called 'white middlings,' which is nearly or quite as heavy as corn-meal, and costs the same. Then there are intermediate grades, differing in fineness and price. There is one grade which looks like shorts, ground over and made fine. [This is precisely what it is.] What I wish to know is which of these grades you mean when you say bran in speaking of the value of manure made from different kinds of food?"—Mr. Lawes gives the composition and value of these different grades of wheat-bran as follows:

	Per Cent.					
	Total Dry Matter.	Total Mineral Matter, (Ash).	Phosphoric Acid reckoned as Phosphate of Lime.	Potash.	Nitrogen.	Value of Manure from one ton of Food.
Wheat Bran	86.0	6.60	7.95	1.45	2.55	$14.59
Coarse Pollard	86.0	6.20	7.52	1.49	2.38	14.36
Fine Pollard	86.0	5.60	6.44	1.46	2.60	13.53
Wheat	85.0	1.70	1.87	0.50	1.80	7.08
Oats	86.0	2.85	1.17	0.50	2.00	7.70
Corn Meal	88.0	1.30	1.13	0.35	1.80	6.65
Peas	84.5	2.40	1.80	0.96	3.40	13.39
Clover Hay	84.0	7.50	1.25	1.30	2.50	9.64
Wheat Straw	84.0	5.00	0.55	0.65	0.60	2.68
Linseed Oil-cake	88.0	7.00	4.92	1.65	4.75	19.72
Decorticated Cotton-Seed Cake	89.0	8.00	7.00	3.12	6.50	27.86

It will be seen from the above that there is little difference in the manurial value of the different kinds of bran. The wheat itself is only worth about half as much for manure as the bran, and wheat flour would be still less valuable. Wheat has been so low the past winter, and coarse grains and bran so high, that the millers have been making "white middlings" with an unusually large quantity of flour in them. These would not be as valuable for manure as the ordinary shorts, canaille, shipstuff, and other grades of bran. As a rule, the feeds best for manure are not the most nutritious—at least I think so. Some people would have us believe that bran is more nutritious than flour, but such is not the case. It is, however, far better for manure. * * * "When speaking of cotton-seed meal, do you mean that which is decorticated, or that which contains all the hulls?"—I mean the former, unless otherwise stated. The manure from a ton of cotton-seed itself, after being ground and sifted, is worth $13.25; that from undecorticated cotton-seed cake $15.75. In grinding cotton-seed and sifting it for food, 8 per cent of husk was removed. Mr. Lawes found it a rich and valuable food for sheep, in connection with fodder, etc. For the sake of comparison, I have included some other common foods in the table above.

Mixing Earth with Manure.—"J. R. L.," Schuylkill Co., Pa. By mixing earth with manure, it will certainly be kept from over-heating or dry-rotting. But the same effect may be procured by turning the manure over when it becomes hot two or three times. This is not so much labor as carting earth to the heap and then carting it back with the manure to the field.

How to Feed Breeding Sows.—"Mr. F. B.," Gallipolis, O., writes: "I have a fine two-year-old imported sow. She is in pig by an imported boar. I paid $90 for her, and wish to raise good pigs. The sow is as "thin as a rail," and I want to ask your opinion, whether it will hurt her to make her pretty fat. If she is as poor when she farrows, as she is now, there will be nothing to suck."—Our own rule is to keep breeding sows in good, thrifty condition, but not too fat. When in pig the sows should have as much exercise as possible, and nearly or quite as much food as they will eat. If the sow is fat, give her a stomach full of food once a day, but let the food be of a bulky and innutritions kind, such as turnips, grass, bran, brewers' grains, and slops from the house. A sow not so fat might be fed the same food twice a day. If the sows are not in good, thrifty condition, give fine middlings instead of bran—all they will eat. If very thin, feed still richer food, such as skim-milk, fine middlings, and say half a pint of corn meal or oil-cake meal per day. Cook and feed in the form of warm slops, two or three times a day. As a general rule, well-bred sows have a tendency to store up fat, rather than to produce milk. We do not think starving them will make them any more likely to give milk. A highly refined, thoroughbred, sow can not stand as great a tax on her strength and constitution, as a coarser and less refined sow. Her strength, or force, has been diverted from the natural tendency to propagate the species, to the rapid accumulation of flesh and fat. If such a sow is as thin as the one described by F. B., it is probable that she was allowed to breed too early, or too rapidly. It would be well, in such a case, to let her have a litter only once a year. Feed her moderately well, and let her husband her strength.

Corn for Soiling.—"L. S. A.," Decatur, Ill. Corn stalks will not sprout from the roots if cut when they are mature, but if late planted corn is cut when partly grown, it will sprout or sucker. Sprouts are not worth depending on for a soiling crop, as there are several things that may be brought in at that season. Corn fodder ought to be cut when it is in tassel or blossom, and as near the ground as possible. Other crops, such as rye sown early and pastured, for instance, should be ready to follow the corn, or a succession of corn plantings which will last until frost arrives, when turnips or beets ought to be ready.

To Make a Compost Heap.—"H. B.," Chicago, Ill. There is no need to dig a trench or plank up a space for a compost heap, nor to cover it with a roof. Such a heap needs all the rain that falls upon it, to provide sufficient moisture for its decomposition. Cemented barn cellars for manure, are useful under some circumstances, but there are many objections to them.

Dry Climates.—"J. H. E.," Toronto, Canada. The dryest climates of the United States are found in Colorado, Utah, and California. Of these places probably the most preferable is Colorado. There are several successful colonies, established originally on the coöperative plan, but now self-dependent, which offer opportunities for new-comers. The industries followed are mainly farming, gardening, and stock-raising. Greeley and Fort Collins are two of these established enterprises, where persons, seeking a dry climate for their health, would find cheap homes and congenial associations. The cultivation of the soil there is wholly by irrigation.

The Cheapest Fence.—"F. A. S.," Montgomery, Ala. The cheapest fence is the most permanent one. A post and board fence, or post and rails, mortised together, made of chestnut or cedar posts, and chestnut rails or boards, will last 40 years. We know of several fences, now good, that are as old as that. But the posts should be charred at the bottom, well seasoned, and the post-holes should be filled with stones, instead of earth. The fence also should be capped with a board laid sloping, to shed rain.

Windmills for Irrigation.—We are asked the following questions: "How much power is a 12-foot windmill supposed to have in an ordinary wind?" (*Ans.* About one horse-power). "How much power would be required to force water through a 1½ inch pipe, into a reservoir fifty feet from the windmill, and twenty-five feet above the water in the well?" (*Ans.* Considerable water would doubtless be forced by a 6-foot mill; an 8-foot mill would supply 50 head of cattle; a 10 or 12-foot mill would furnish a very large amount). "In watering strawberries, etc., with a reservoir and pipes, what size of hose is generally used?" (*Ans.* Three-quarter inch or 1-inch). "How much land can a man water in ten hours, and give the ground a good soaking—say ½ inch of water all over it?" This last question is not easy to answer with accuracy. To cover an acre of land half an inch deep, would require about 12,500 gallons. With a cylinder 3 inches in diameter, and a stroke of 6 inches, the pump making 60 strokes per minute, there would be delivered about 11 gallons per minute, or about 15,000 gallons in twenty-four hours. It would be fair to suppose that such a pump, driven by a 12-foot mill, in a reasonably well exposed situation, would average twelve hours per day in work, giving 7,500 gallons, or enough for rather more than half an acre of land. If the irrigation is to be carried on so extensively as this, that is, with such a considerable flow of water, it would be cheaper and better to adopt a regular system of grades, allowing the water to overflow the land from ditches, as is done in all regular irrigation works. It would, in this case, be necessary only to have a large storage capacity for water, and this need not be elevated above the highest point of the land to be flowed.

"Egg Oats."—"E. H. M.," Danbury, Conn. The oats in which eggs are packed, are generally damaged by rotten eggs, broken in the barrel, or are light, inferior oats, chosen for this purpose. They are not proper feed for horses, and are generally used for poultry or pigs. On account of their inferiority they are sold at a low price.

To Decompose Tanners' Waste.—"A. R.," Warren Co., Pa. Hair and fleshings from a tannery should not be spread upon a meadow when fresh. They dry up without decaying, and will be raked up with the hay. The hair is difficult to rot in any way. If the waste is mixed with stable manure and the heap turned over occasionally, all but the hair will be decomposed in a few months, but that will remain a great while. We have found the best method of using this waste, to spread it upon the sod to be plowed for corn, or upon the oat-stubble to be plowed for wheat. We have seen it spread upon a meadow in the fall, and after exposure to the rains for half a year, there was scarcely any of it to be seen on the ground.

To Decompose Straw.—"J. S. H." If a bushel or two of quicklime is put into a straw stack, it may, as soon as it gets wet, set fire to and destroy the stack. This is probably not the sort of decomposition you want. To reduce the straw to manure by means of lime, it should be scattered until thoroughly wetted, and then heaped up with about ten bushels of dry slacked lime to the ton of straw, well intermixed. The heap should be exposed to the rain, as moisture is needed to assist the rotting, and considerable heat is evolved.

Treating a Fistula.—"L. H. T.," Buckland, Mass. A fistula cannot be cured by medicine given internally. It requires mechanical treatment. The "pipe" must be destroyed by injections of mineral acids, and the sore then carefully healed from the bottom. It would be best to apply to a veterinary surgeon, and not use a hot iron, which might do mischief. To breed a mare at two years of age is too early—she should be fully grown.

Uniform S. S. Lessons—Origin.—A series of Sunday School Lessons is now in use throughout this whole country, and largely in Europe, each denomination giving its own accompanying notes and explanations. It is a beautiful idea that on every Sunday millions of children are all studying the same Bible lesson. The N. Y. Independent quotes with endorsement this from the Presbyterian: "....Without doubt this Uniform Lesson movement has done more to stimulate Bible study in school and at home than any one event in the history of the Sunday School or perhaps in the history of the church."....In 1849 Mr. ORANGE JUDD prepared a series of Sunday School Lessons, and placed them against the church wall near the pulpit, so that the people would all have the lesson for each Sabbath prominently before them. This led to more careful study of the lessons at home. Following up the idea, in 1859-60 he had prepared a series of 52 lessons, entitled "*Lessons for every Sunday in the Year*," embracing connectedly the leading events in the Four Gospels and Acts. These were first printed in the *American Agriculturist* 14 years ago (1861). They were widely adopted; hundreds of thousands of cards containing them were printed for distribution, and many religious journals copied them. This was the *beginning* of the use of Uniform Lessons. Three other series, of 52 lessons each, were afterward prepared by Mr. Judd, and in 1862 a Lesson and Question Book on the first series of Lessons was issued, in which Mr. Judd was largely assisted by Dr. James Strong S. T. D., and Mrs. Dr. Olin. The copy-right was presented to a Sunday School Publishing House, and nearly a million copies were scattered through the country. The first school adopting them was that of Dr. Alexander, N. Y., Presbyterian; the second that of Dr. Porter, Brooklyn, Reform Dutch, and then they went almost equally into the schools of various denominations. As an indication of the religious but unsectarian character of these books, Mr. Judd received many letters from Baptist, Congregational, Methodist, and Presbyterian clergymen and teachers, all supposing him to be a member of their individual organizations. Three other books, each entitled "Lessons for Every Sunday in the Year," and the four embracing the whole Bible, were subsequently issued. March 14, 1863, Dr. Hart, LL.D., editor of the *Sunday School Times*, Philadelphia, wrote, "We have just been examining a little book, prepared by Orange Judd, New York, called '*Lessons for Every Sunday in the Year*,' and have risen from the examination with a feeling of *thankfulness* that such a book has been made. We have never seen a Question Book containing so many conveniences and advantages, as this, so many excellencies, both positive and negative. Mr. Judd is a life-long Sabbath School man, and this book is the fruit of the experience of himself and some of his friends, in trying to meet the practical wants of the Sabbath School. *Like all good text books, it has grown out of the actual necessities and experience; it is a growth rather than a work.* We advise every Superintendent to send at once for a copy."....After the general attention thus awakened, various new books sprung up on the same plan, and the original works have been somewhat overlooked, though they are still much used. What is said above shows that, like many other good enterprises, this "UNIFORM LESSON" movement originated in and through the *American Agriculturist*.

Value of Wood Ashes.—"Old Subscriber." Wood ashes made at lime-kilns and brick-yards are generally mixed with a quantity of rubbish, which reduces their value proportionately. As the fuel is burned with great heat, these ashes are less valuable than those burned at a lower temperature. Unleached ashes are worth considerably more than leached ashes, because the latter contain no readily soluble potash, in which the chief value of wood ashes consists. But leached ashes contain some potash, which becomes soluble in the soil after a lapse of time, and are thus of some value. They also contain some phosphoric acid. Generally leached ashes from the soap factories are worth one-fourth the value of unleached ashes; those from domestic leach-tubs are worth more than that, possibly in some cases, one half the value of unleached ashes. When ashes can not be procured for less than 25 cents a bushel, it will be more economical to buy the German potash salts, (Kianit.)

An Impure Well.—"W. M. F.," Northford, Ct. The fact that the water in a well changes its character, becomes impure for a time, and then improves, is sufficient evidence that organic matter finds its way into the well. A similar thing occurs when river water, containing impurities, is put into large casks for use upon ships on long voyages. For a few weeks this water undergoes a change, known amongst sailors as "sweetening," in which a very fetid odor is given off, the impurities, after the fermentation is over, are precipitated, and the water becomes sweet and pure, and remains so without further change. This alteration is probably due to the oxidation of the organic matter contained in the water. In your case, we should suspect a leak from a cesspool near by, or the admission of surface water without its having been purified by filtration through clean soil. There should be at least 30 feet between a well and any possible cause of impurity, such as a barn-yard, cesspool, or kitchen sink.

Scabby Legs in Poultry.—"H. W. B.," East Saginaw, Mich. The cause of scabby legs in poultry, is a parasitic insect, similar to the scab acarus of the sheep. The remedy is similar to that for scab. Wash the legs with a solution of potash, until the scabs are softened and peeled off, then dress them with an ointment of lard and sulphur, or wash them with carbolic soap suds.

Remedy for Quarter-Crack.—"W. C.," Schultzville, Pa. To cure a quarter crack, pare down the edges of the crack up to the sound horn above, if there is any, making a Λ shaped cut into the horn over the termination of the crack. Rasp the horn over the cut and keep the crack dressed with clean tow dipped in glycerine. The hoof should be bound up in a leather shoe tightly laced, to prevent the crack from spreading, or an India rubber shoe used. As the horn grows downward, the crack will grow down also, if care is used and all goes well. If there is no sound horn above the crack, but it reaches to the coronet, it is a very difficult thing to cure, and a surgeon had better be employed.

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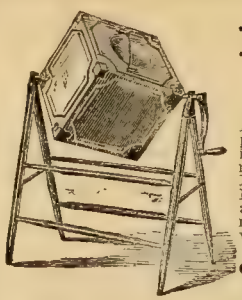

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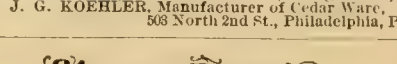

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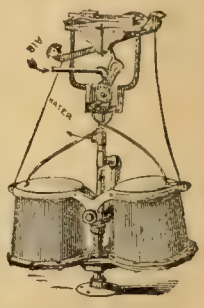

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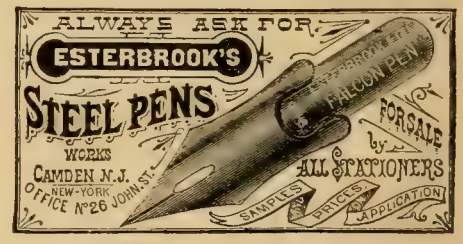

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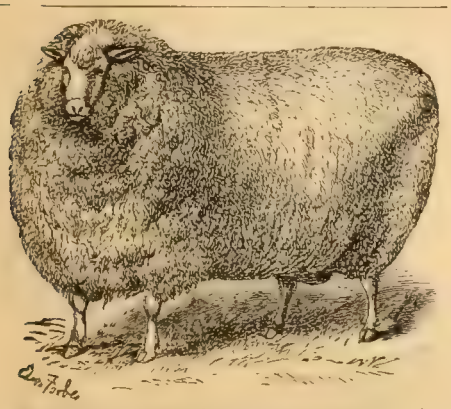

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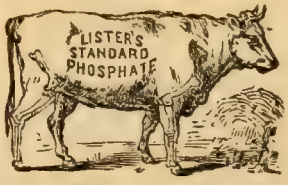

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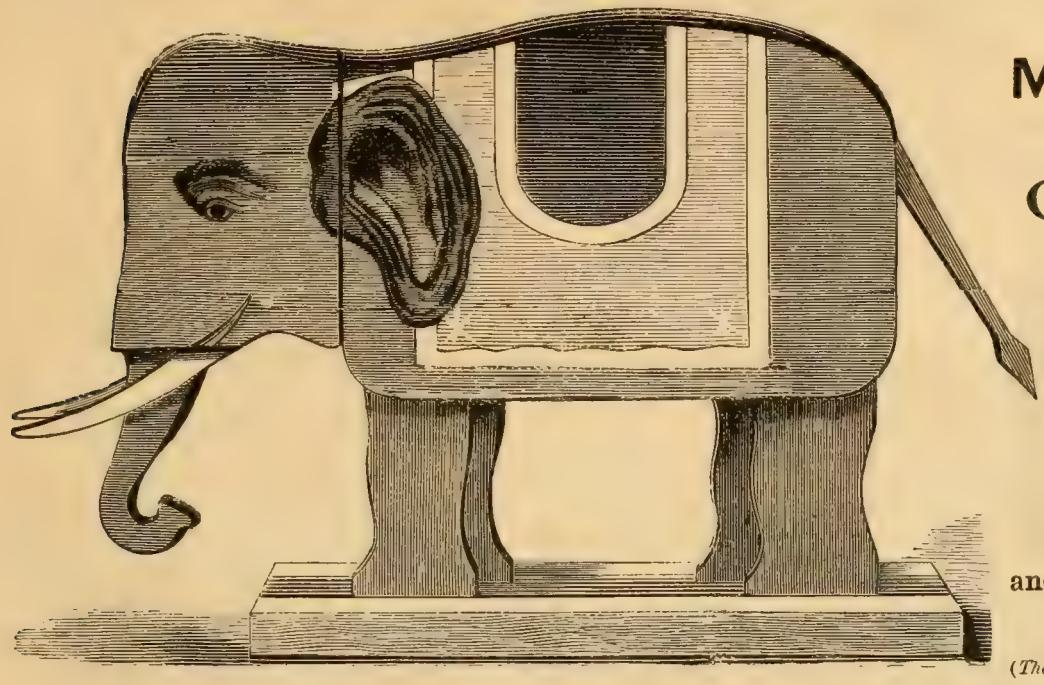

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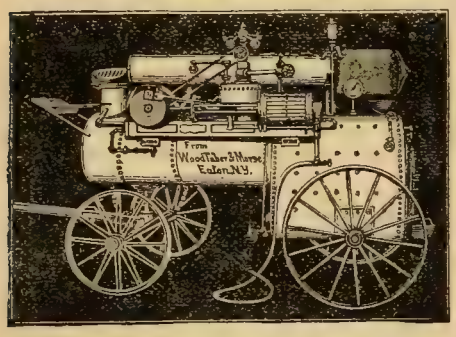

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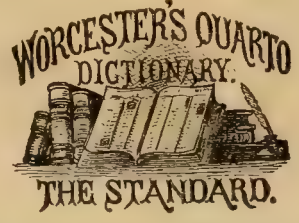

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VOLUME XXXIV.—No. 8. NEW YORK, AUGUST, 1875. NEW SERIES—No. 343.

BOBBING FOR EELS.—*Drawn and Engraved for the American Agriculturist.*

While the skilled angler looks with contempt upon such unsportsmanlike fishing as the catching of eels, many a boy, and man too, has found in it the means of procuring an excellent breakfast. However repulsive their snake-like form may be to some, none who have ever tasted them will deny that they are good eating. Eels are caught in "pots" or traps, by spearing them through the ice and by bobbing. To make a bob, a number of large earthworms are, by means of a large needle, strung upon worsted or silk thread; when a sufficient number are thus strung, they are folded up, making a "bob" or bunch like a tassel, as large as one's fist; in the center of the bob is tied a small lump of lead to serve as a sinker. The bob is tied to the end of a string five or six feet long, which is attached to a rod of suitable length, and a lighted lantern and basket complete the outfit. Bobbing is done at night; having selected the spot where he intends fishing, the bobber suspends the lantern over the water at the end of a stick, and casts in his bob; the eels are attracted by the light, and commence to feed on the worms. When the bobber thinks he has a good bite, he gives a violent but skillful jerk of the rod, and lands the eels upon the grass behind him. Bobbing is also practiced from boats, but it requires quite some skill to give just the proper jerk to drop the eels into the boat. Eels are very fond of birds, and the sportsmen often see their game which drops into the water disappear before they can reach it. A sporting friend of ours states that while shooting rail among the reeds of the Delaware river, he frequently lost birds in this manner, but he took the hint and made a bob of a dead bird by sewing it through and through with silk, and tied it the same as a bob, the result was highly satisfactory in the number of eels captured. The use of the silk here as in the bob, is to catch in the fine teeth of the eel.

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Calendar for August.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	4 52	7 20	sets	4 56	7 16	sets	5 0	7 12	sets.
2	M	4 53	7 19	8 22	4 57	7 15	8 20	5 1	7 11	8 16
3	T	4 54	7 18	8 47	4 58	7 14	8 45	5 1	7 10	8 43
4	W	4 55	7 16	9 8	4 59	7 12	9 7	5 2	7 9	9 7
5	T	4 56	7 15	9 27	5 0	7 11	9 28	5 3	7 8	9 28
6	F	4 57	7 14	9 44	5 1	7 10	9 46	5 4	7 7	9 48
7	S	4 58	7 13	10 7	5 2	7 9	10 10	5 5	7 6	10 13
8	S	4 59	7 11	10 30	5 3	7 7	10 34	5 6	7 4	10 39
9	M	5 0	7 10	10 57	5 4	7 6	11 03	5 7	7 3	11 9
10	T	5 1	7 9	11 28	5 5	7 5	11 35	5 8	7 2	11 42
11	W	5 2	7 8	morn	5 6	7 4	morn	5 9	7 0	morn
12	T	5 3	7 7	0 10	5 7	7 3	0 18	5 10	6 59	0 26
13	F	5 4	7 5	1 2	5 8	7 1	1 9	5 11	6 58	1 17
14	S	5 5	7 4	1 59	5 9	7 0	2 6	5 12	6 57	2 13
15	S	5 6	7 2	3 11	5 10	6 58	3 17	5 13	6 55	3 23
16	M	5 7	0	rises	5 11	6 56	rises	5 14	6 53	rises
17	T	5 8	6 59	7 33	5 12	6 55	7 33	5 15	6 52	7 30
18	W	5 9	6 57	7 57	5 13	6 53	7 56	5 16	6 50	7 55
19	T	5 10	6 55	8 18	5 14	6 52	8 18	5 17	6 49	8 19
20	F	5 11	6 54	8 40	5 15	6 51	8 42	5 18	6 48	8 44
21	S	5 12	6 52	9 16	5 16	6 49	9 19	5 19	6 46	9 22
22	S	5 14	6 50	9 36	5 17	6 48	9 40	5 20	6 45	9 45
23	M	5 15	6 50	10 11	5 18	6 47	10 17	5 21	6 44	10 23
24	T	5 16	6 48	10 57	5 19	6 45	11 4	5 21	6 42	11 11
25	W	5 17	6 47	11 55	5 20	6 44	morn	5 22	6 41	morn
26	T	5 18	6 45	morn	5 21	6 42	0 2	5 23	6 40	0 10
27	F	5 19	6 44	1 1	5 22	6 41	1 8	5 24	6 38	1 14
28	S	5 20	6 42	2 18	5 23	6 39	2 24	5 25	6 37	2 30
29	S	5 21	6 40	3 32	5 24	6 38	3 37	5 26	6 36	3 41
30	M	5 22	6 39	sets.	5 25	6 36	sets	5 27	6 34	sets
31	T	5 23	6 37	7 11	5 26	6 35	7 10	5 28	6 33	7 9

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MOON.	BOSTON. D.	H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
New M'n	1	8 44 mo.	8 32 mo.	8 20 mo	8 8 mo	7 38 mo.
1st Quart.	8	10 46 ev.	10 33 ev.	10 22 ev.	10 10 ev.	9 40 ev.
Full M'n	16	8 50 ev.	8 37 ev.	8 26 ev.	8 14 ev.	7 44 ev.
3d Quart.	23	8 55 ev.	8 42 ev.	8 31 ev.	8 19 ev.	7 49 ev.
New M'n	30	6 57 ev.	6 44 ev.	6 33 ev.	6 21 ev.	5 51 ev.

AMERICAN AGRICULTURIST.

NEW YORK, AUGUST, 1875.

The gloomy forebodings which were called forth by an unpropitious spring, have been fulfilled only in part. In many places where the destruction of the crops was feared, an abundant harvest has been gathered. The locust and the chinch bug have happily failed to do any serious damage, and where last year there was poverty and suffering, this season there is abundance and comfort. So the wheat-fields which were all but destroyed by the winter's frosts revived under the influence of favorable summer weather, and while the crop is short, yet it will doubtless produce as much in money as if it were larger. The prospects of the markets are not easy to prognosticate. At any rate, there is but little probability of any material advance, while on the other hand, farmers will not submit to any reduction of prices, and need not force their grain on an unfavorable market. However, business everywhere is gradually resuming a healthy character. In this there is a good promise for returning prosperity to the farmer who, now that his year's labors are nearly finished, may cheerfully and gratefully take rest and recreation, knowing that things are not so bad as were expected.

Hints about Work.

Weeds.—It is proper to commence this chapter of hints with weeds. In our walks over farms in different localities, we see weeds are everywhere, in the corn-fields, amongst the potatoes, in the stubbles and the young clover, and with ripe, or rapidly ripening seeds. Some good farmers keep them out of their crops, but around the fences and in odd corners there are thrifty patches full of seed. At a gathering of farmers last month, some of them complained to us that the weeds were ruining their farms. In the very field where we stood, *a summer-fallow* too!—the weeds were in full bloom, and if mowed, would have made a ton to the acre. Ox-eye daisy, snap-dragon, wild radish, thistles, rag weed, pig weed, amaranths, and a score of such common, but pestiferous plants, covered the field so that the plow could not wholly bury them. When this summer-fallow was plowed, the field was seeded for a whole lifetime. Twenty years' labor cannot wholly clear it, and yet the man who owned the farm complained that the weeds were ruining him. There is one remedy for weeds, which is thoroughly effective, and that is cutting them wherever found in odd places, before they blossom, and clean cultivation in the fields.

Insects.—It is the same with insects as with weeds, beetles, bugs, catterpillars, and insects of all sorts in all their forms. There must be constant warfare against them, and they must be killed by every means in our power. But a farmer must keep his eyes open, or he will fail to see the enemy until too late. The tent catterpillars sometimes clear every leaf from an orchard before the owner notices their unsightly nests upon the trees. Study the habits of these pests, and look out for them. Search the former volumes of the *Agriculturist* for information about them, and follow directions. Insects and weeds rob farmers of half their profits, half their rest, and double their work. United and constant efforts are needed to get rid of them, but after every year of effort, the work will be lighter.

Thrashing.—Grain in the granary is safe if the granary is a secure one. With such a building as was described in the *Agriculturist* for June last, the grain will keep safely and without loss, until sold. Thrash as soon as possible, whether the grain be sold or not. Some think it will pay to hold grain another year. That may be well for those who can afford it, but if one is in debt and borrowing money to hold grain, it is well to think twice and count up the cost in interest. To pay interest on a debt and lose interest on money in bank, or idle, (and grain is money), is simply paying double interest.

The oat stubble should be plowed as soon as the crop is harvested, so as to start the shelled grain into growth. No more plowing is needed. Keep the surface cultivated or harrowed. This will kill thousands of weeds from newly dropped seeds. The pulverizing cultivator made by Gifford Johnson & Co., Hudson, N. Y., is a good implement for this purpose, and may be set to cut one, two, or three inches in depth, as may be desired. It will also cover the seed handsomely and better than a harrow. By keeping the surface mellow, the bottom is kept from becoming too dry and hard.

Lime.—If lime is to be spread upon an oat stubble which is to be sown to wheat next month, and clover in the spring, it should not be drawn from the kiln until the ground is plowed, when it can be dropped at once on the field in heaps of one bushel two rods apart each way. This will give exactly 40 bushels per acre, which is a very fair dressing. The first shower will slake the lime and cause it to fall into a fine powder, when it may be spread evenly in a square, one rod each way from the heap, with a long-handled shovel. This is by far the easiest way of handling lime.

Old Pastures may be renewed this month by cutting off the brush, bushes, etc., a little below the surface, burning them and spreading the ashes. Then go over the ground with a heavy sharp-toothed harrow, and tear up the surface, spread some lime and top-dress with the scrapings of the stables and yards, sow some fresh seed and roll. A mixture of six pounds of timothy, four pounds of Kentucky blue grass, and four pounds each of red and white clover, may be used.

Stacks of grain or hay should be well topped off or thatched, the fodder saved will pay the cost.

Root Crops will need thinning severely. Every supernumerary plant is really a weed, and should be pulled out with other weeds. Twelve inches apart is near enough for ruta bagas and turnips.

Fall Plowing.—Clover sod for wheat should be turned perfectly flat and rolled to compact the sod. Six inches is deep enough for the plowing. Either a Shares' or a Nishwitz harrow is a good implement to work the surface before the seed is drilled in. The sod should not be cross-plowed, but the soil worked fine with the cultivator or harrow.

White Turnips will make a good crop on an oat-stubble if sown early this month; 200 lbs. of guano per acre will make a good and active fertilizer for these roots. To get an even crop, halve both the seed and manure, and sow broadcast both ways; cover with a bush-harrow or roller.

Working Cattle.—Horses and oxen should have

long rests at noon, and at night, after having been well fed, be turned into a pasture to rest. They should be brought in early in the morning and fed and curried. This will greatly refresh them.

Cows.—The milk will now fall off greatly unless fresh green feed is furnished to the cows. Thinnings from the root crops or the corn-fields will still yield a good feed every night for a week or two. But it is best to have a piece of fodder corn especially planted for this purpose. If nothing else can be given them, a pailful of bran slops for each one will be of great service. Cows that are once allowed to shrink in their milk, will fall into a habit of doing it always.

Sheep.—Late lambs should now be weaned. The ewes should be closely watched and milked dry every second evening, if necessary, until quite dried off. Rams should be separated from the ewes except those from which lambs in January are wanted. Where there is every facility for taking care of and disposing of such early lambs, they are by far the most profitable. Commence to feed rams for their fall work. If a thoroughbred ram is to be purchased, do it at once while there is a good choice.

Swine.—Pigs or hogs to be fattened should be put up now. They will make more growth in a month now than in two months by and by. Give them plenty of pure water and dry, clean pens. Sows bred on the first of August will farrow in sixteen weeks, or about the 1st of December. With warm, good pens, pigs may then be raised without trouble, making good porkers in the spring. If pigs are not wanted, then they should not come until March, and the boar should be shut up in the meantime.

Selecting Seed.—As it is by selecting seed and carefully preparing and planting a portion of the ground specially for the growth of seed, that improvements in farm crops are made, it would be well not only to select seed wheat for the fall sowing with care, and to free it from seeds of weeds even by hand-picking if necessary, but to prepare and sow a portion of the field with more than usual care for the production of seed for next year's crop. Much may be done in this way to improve the crops, and instead of farmers paying high prices for seed to persons who will take this care, they should do it for themselves and save this tax.

Sundry Matters.—Insurances that have lapsed should be renewed, and where there is none it should be secured without delay. Insurance is a tax for safety that no person should grudge to pay. All those machines and tools that are now out of use should be cleaned and put away in a safe place. Any oily rags used in cleaning should be carefully burned; if thrown in a corner carelessly, they may take fire spontaneously and destroy much property. Now is a good time to weed out the stock, to get rid of unprofitable animals and procure better ones. There should be a constant effort to increase the value of live-stock by procuring thoroughbred males, choosing the best females to breed from, and selecting the best of the produce for stock.

Work in the Horticultural Departments.

If the work has been properly forwarded, there will be a little breathing spell in this month of comparative leisure. The boys and hired men should have a vacation, either a day or two of fishing, a visit to the seashore, a trip to the mountains, or whatever in the way of recreation the vicinity affords; they will come home refreshed and ready for the fall work. When boys are kept hard at work day after day, they become listless and careless about their work, and their only thought is to get into the city as soon as they are of age. A little recreation cheerfully offered now and then, will help greatly to make them contented. There are yet many little odds and ends which need to be looked after, and for which time can be better spared now than later. Draining in the orchards or elsewhere, may be done at this season, and as labor in the vicinity of large towns is cheap, it will, if one has the means, be a paying investment to do it. Do not allow the docks and other weeds to run to seed, and provide labor for the next season. This month is a good one in which to put up or repair any buildings needed upon the place.

Orchard and Nursery.

Drouths are likely to tell upon newly planted trees this month, and particularly upon those which were improperly taken up, and had poor roots. A mulch even at this late date, may save many which would perish without it.

Web-worms are often found in abundance upon fruit trees at this time; if they are upon small twigs, cut these off and burn; when they infest large limbs, they must be removed with the hand.

Insects.—Large quantities of immature fruit are often found under the trees; this is the work of insects; allow the pigs the run of the orchard, or have the fruit picked up and the insects destroyed, to prevent a crop for the coming year.

Bud whenever the bark is loose enough to lift readily, and when well-ripened buds can be had. Keep the sticks of buds moist until used.

Marketing.—In order to get good prices for fruits, they must be carefully assorted and handled, as upon this depends the profit or loss of the business. Every parcel of fruit should be so packed that there will be no danger of bruising in transportation; the quality should be the same throughout, that buyers may rely upon the grower's brand.

Weeds.—Do not allow any to go to seed if the orchards are cultivated; if the ground is simply kept plowed, and no crop raised, the harrow may be used every week or ten days; this will keep the soil loose and clear of weeds.

Old Trees.—Around most places which have been long settled, are to be found old trees, which occupy a large spot of valuable ground, producing only indifferent fruit, and are too poor to renew by grafting; these had better be converted into fire-wood, and plant better trees next fall.

Fence Rows around orchards as well as vegetable gardens, are often infested with poison-ivy and other woody weeds, which soon encroach upon the grounds if not destroyed. The best plan for killing all such, is to take the fence up altogether, where practicable, and after mowing the tops off and burning, plow deeply; this will soon destroy them if followed up persistently.

Fruit Garden.

Raspberries.—Cut off the old fruit canes, and manure with well rotted manure. Keep the new canes tied to stakes or trellises to prevent their being broken by the wind.

Blackberries.—Cut out all but three or four canes of the new growth, and tie to stakes. Do not pick the fruit until it is thoroughly ripe, if for home use; if for market, it must be gathered while yet firm, else there will be danger of bruising.

Grapes.—As soon as any signs of mildew appear, apply sulphur to the vines. Tie up the new canes to the trellises with soft cotton twine.

Fruit.—All surplus fruit not needed for family use or market, may be canned or dried for winter. It often happens that there is a glut of some particular fruit, and it will not pay to send it to market; but it can be preserved by canning or drying.

Dwarf Trees.—Remove all deformed fruit, and if the trees are too full, make a final thinning, so that they may not over-bear.

Currants and Gooseberries.—As soon as these have done bearing, give a good dressing of manure, and keep the weeds down by cultivation.

Kitchen Garden.

In a well ordered garden at this season, there should be an abundance of vegetables of the best quality. The early varieties such as peas, asparagus, and the like, will be succeeded by squashes, beans, tomatoes, corn, and various others.

Asparagus must not be neglected and allowed to go to weeds, even though it has ceased to yield a return; it is storing up nourishment for a strong growth the coming season, and in order to do this, it must have had food in the shape of manure, and now it must not be robbed by weeds.

Beans.—It is not yet too late to plant these for late snaps. Keep the pole sorts hoed and weeded, and when they reach the tops of their poles, pinch off, to induce the growth of the pods and beans. The Limas may need a little assistance in attaching themselves to the poles, and for this use bass matting, taking care not to tie too tight.

Cabbages and Cauliflowers must be hoed often, to give a rapid growth; this is especially beneficial in the morning when the dew is on the plants; use liquid manure judiciously and greatly diluted.

Carrots.—Use the hoe and cultivator between the rows until the tops cover the ground; large weeds which appear in the rows, must be hand-pulled. Remove all plants which throw up a flower-stalk.

Celery may yet be set out for a late crop.

Corn which has yielded its crop of ears, may be cut and given to the cows, and the ground planted with turnips or late cabbages. Cut off all smutty parts and burn them.

Cucumbers.—Cut every day for pickles, choosing those not more than two or three inches long.

Egg Plants.—The warm weather at this season will cause a vigorous growth, and if liquid manure is given, they will be benefitted by it. Place a handful of hay around the plants, to keep the fruit from contact with the ground.

Lettuce.—Sow a few seeds in a cool, shady spot, to give plants for setting next month.

Melons ought to be cultivated until the vines cover the ground and prevent; after this the weeds that appear may be hoed or hand pulled.

Onions may be harvested when the majority of the tops fall over. Pull and let them remain in the sun for a few days before storing. Store in a dry place where there is free circulation of air, otherwise they are liable to rot. Onion sets must be spread very thinly.

Spinach.—Sow for fall use now, and next month for winter.

Sweet Potatoes should be making a rapid growth at this season; the ridges must be kept hoed, and the vines lifted to prevent their taking root.

Tomatoes.—Tie up to trellises or place hay or brush around the plants to keep the fruit from the ground. Destroy the green worm when found.

Turnips—Sow all vacant spots where the crops have been taken off with turnips; they grow quickly and yield good returns; if the fly appears, dust the plants when wet with lime or plaster and ashes.

Weeds.—If weeds have been allowed to become large, they must be hoed and raked off, otherwise they soon take root again. Use all the labor-saving implements that can be afforded to kill the weeds; there are numerous good and effective sorts of hand cultivators and wheel hoes. Where the horse cultivator can be used, it should take the place of hand labor, as quicker and better, but as every garden has some spots where they cannot be used, hand ones must be used. For paths and drives, where it is not necessary to stir the soil deep, a push hoe is very effective and easier to handle than an ordinary hoe. The garden should be gone over with hand or horse cultivator every week during the growing season, to keep the weeds under.

Flower Garden and Lawn.

Lawns require mowing often to keep the turf smooth and prevent weeds from growing. Remove all perennial weeds by the use of a spud or sharp narrow spade. Roll after a rain to induce the formation of a close turf.

Edgings of grass around the walks and flower-beds must be cut often to keep the roots from spreading to the walks or beds.

Walks and Drives are liable to become weedy if not hoed and raked often. Remove the weeds after hoeing, and make the ground in the center higher than the edges; this will allow the rain to run off, leaving the middle dry and hard. Sprinkling and rolling during dry weather are important.

Dahlias.—Keep tied to stakes and give water during drouths. Pick off all deformed flower-buds.

Gladioluses, when planted among low shrubs, do not require stakes, and make a good show of flowers after the shrubs have done blooming.

Lilies.—Some of the taller sorts need stakes, as they are liable to be broken by high winds. The California species succeed best if planted permanently in a well drained place, where they can be covered during the winter with leaves. The surest method is to grow them in frames.

Shrubs.—There are many shrubs which can be easily grown from cuttings made from the new wood at this season. Weigelas, Forsythias, Loniceras, etc., all root readily. A frame sheltered from the sun is the best place in which to start them.

Bedding Plants set out in borders must be kept weeded and pruned into proper shape when necessary. During dry weather give water abundantly, if given at all.

Seedlings of perennials must be sown as soon as ripe, in boxes, and sheltered from the sun by screens of brush or lattice work. During damp and cloudy weather, many varieties can be set, and if shaded during the middle of the day, will grow well.

Greenhouse and Window Plants.

So much care is required by the plants out of doors, that those in the house and greenhouse are liable to be neglected. Do not let the plants become infested with insects, but fumigate and shower often. Look out for scale on ferns and other plants, and wash the more robust ones with whale oil soap, and remove with a soft sponge and sharp-pointed stick from the tenderer sorts. Give shading and water, and do not omit the proper degree of ventilation, never allowing, however, the wind to blow directly upon the ferns and other tender plants. Soil and pots should be provided for use during the fall and winter; sods well rotted and chopped up fine, make the best potting material for tender plants, while for ferns and orchids, a mixture of fibrous peat or leaf-mold and sand is excellent.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending July 12th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
24 d's *this* m'th	279,000	8,918,000	2,312,000	23,000	—	815,000
25 d's *last* m'th	267,0 0	3,315,000	2,604,000	37,000	161,000	916,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
24 d's *this* m'th	417,000	5,391,000	1,985,000	31,000	—	2,117,000
25 d's *last* m'th	381,000	4,102,000	2,817,000	61,000	151,000	1,363,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
24 days 1875	279,000	3,918,000	2,312,000	23,000	—	815,000
25 days 1874	271,000	5,310,000	5,117,000	53,600	21,000	916,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
24 days 1875	417,000	5,391,000	1,985,000	31,000	—	2,117,000
25 days 1874	263,000	4,873,000	4,911,000	51,000	—	1,104,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
July 12, 1875	559,919	1,152,596	44,323	1,163	823,161	312,266
June 7, 1875	668,456	1,304,404	27,678	1,163	546,157	267,085
May 11, 1875	969,894	1,542,924	16,124	16,537	545,209	229,455
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,617
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	791,722	135,882
June 8, 1875	383,169	116,651	68,188	1,573	323,343	74,669

4. *Exports from New York, Jan. 1 to July 9.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
1875	923,289	10,638,507	6,608,198	105,657	165	61,840	218,169
1874	1,182,136	20,601,800	10,185,019	512,622	240	69,603	253,365
1873	678,482	6,377,645	6,513,315	190,676	19,226	17,578	53,030
1872	448,080	4,202,506	11,967,765	366,829	22,656	17,215	115,066
1871	953,831	8,193,157	4,824,872	43,018	83,679	14,889	—
1870	880,626	7,964,108	164,468	65,734	—	9,783	—
1869	665,950	6,260,768	1,481,849	68,536	—	42,257	—
1868	481,663	2,956,522	4,044,602	158,093	—	39,368	—

5. *Receipts at head of tide-water at Albany each season to July 1st.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1875	11,700	3,217,700	821,700	53,500	—	775,600
1874	17,900	8,618,600	1,190,000	171,100	74,100	996,200
1873	52,100	3,556,700	3,518,100	299,100	12,200	810,400
1872	32,200	1,682,800	6,516,600	263,100	451,500	1,561,200
1871	78,700	4,338,300	4,258,000	46,200	40,100	999,600

Gold has been up to 117, and down to 115¼, closing July 12th at 115⅝, as against 116⅞ on June 12th..... The movements in Breadstuffs have been quite extensive since our last, but at variable prices. Toward the close, the foreign accounts have been favorable to the export trade, and very liberal purchases, particularly of Spring Wheat, have been made for shipment, and a good business also for home use, closing generally at firmer rates, though Oats have been exceptionally depressed. Samples of new Wheat, new Wheat Flour, and new crop (California Chevalier) Barley have been received here since our last....Provisions have been in less demand, and at the close quoted generally cheaper....Cotton has been fairly active, closing firmly....Wool has been moderately dealt in, mostly by manufacturers, but at some concessions from late rates, particularly on Texas and California product, the offerings of which have been liberal. Western Fleece has been arriving very sparingly, and has been held above the views of purchasers, here and at the interior, checking transactions....Tobacco, Hops, Hay, and Seed, have been less sought after, though toward the close, with warmer weather, State Hops have been attracting more attention....Ocean freights have been quite active with Grain, Flour, and Provision room wanted. Flour by sail and steam to London, 2*s.* 3*d.* @ 2*s.* 6*d.* per bbl.; Grain by sail, to do., 9*d.* per bushel; Grain by steam to Liverpool, 7½@8*d.*, and by sail, to do., 7½*d.* per bushel. Grain tonnage for Cork and orders, 7*s.* @7*s.* 3*d.*; for Penarth Roads, and orders, 6*s.* 6*d.*@6*s.* 9*d.*; for the Continent, 6*s.* 9*d.*@7*s.* 3*d.* per quarter.

CURRENT WHOLESALE PRICES.

	June 12.		July 12.	
PRICE OF GOLD	116 7-8		115 5-8	
FLOUR—Super to Extra State	$4 50	@ 5 85	$4 60	@ 6 15
Super to Extra Southern	4 60	@ 8 25	4 60	@ 8 00
Extra Western	4 85	@ 8 50	5 15	@ 8 00
Extra Genesee	5 35	@ 7 00	5 65	@ 7 00
Superfine Western	4 50	@ 4 80	4 60	@ 5 00
RYE FLOUR	4 30	@ 5 50	4 30	@ 5 50
CORN-MEAL	3 60	@ 4 50	3 65	@ 4 75
WHEAT—All kinds of White	1 25	@ 1 35	1 25	@ 1 40
All kinds of Red and Amber	1 09	@ 1 33	1 15	@ 1 38
CORN—Yellow	83	@ 86	83	@ 85
Mixed	78	@ 85	75	@ 84½
White	85	@ 90	88	@ 90
OATS—Western	70	@ 76	63	@ 71
State	70	@ 76	64	@ 71
RYE	87	@ 1 00	90	@ 1 10
BARLEY	Nominal.		Nominal	
HAY—Bale, ℔ 100 lbs	60	@ 1 10	60	@ 1 10
STRAW, ℔ 100 lbs	50	@ 90	50	@ 90
COTTON—Middlings, ℔ lb	15⅝	@ 16	15⅝	@ 16
HOPS—Crop of 1874, ℔ lb	25	@ 38	25	@ 36
FEATHERS—Live Geese, ℔ lb	35	@ 62½	35	@ 62½
SEED—Clover, ℔ lb	11	@ 11¾	11	@ 11½
Timothy, ℔ bushel	2 55	@ 2 75	2 60	@ 2 75
Flax, ℔ bushel	1 85	@ 2 00	1 85	@ 1 90
SUGAR—Refi'g & Grocery ℔ lb	7¼	@ 9⅝	7	@ 9½
MOLASSES, Cuba, ℔ gal	30	@ 43	30	@ 40
New Orleans, ℔ gal	68	@ 75	70	@ 74
COFFEE—Rio (Gold)	16	@ 19	17¼	@ 20
TOBACCO, Kentucky, &c., ℔ lb	10	@ 28	10	@ 25
Seed Leaf, ℔ lb	7	@ 55	6	@ 55
WOOL—Domestic Fleece, ℔ lb	25	@ 60	25	@ 60
Domestic, pulled, ℔ lb	25	@ 51	25	@ 50
California, clip	15	@ 35	15	@ 36
TALLOW, ℔ lb	8¾	@ 8⅞	9	@ —
OIL-CAKE—℔ ton	39 00	@ 42 50	40 00	@ 45 00
PORK—Mess, ℔ barrel	19 75	@ 19 90	20 40	@ 20 50
Prime Mess, ℔ barrel	—	@ 18 75	19 25	@ 19 50
BEEF—Plain mess	8 50	@ 10 00	8 00	@ 9 50
LARD, in trcs. & barrels, ℔ lb	13	@ 13¾	12½	@ 13½
BUTTER—State, ℔ lb	15	@ 28	15	@ 30
Western, ℔ lb	12	@ 24	13	@ 26
CHEESE	4	@ 12½	3	@ 12½
BEANS ℔ bushel	1 55	@ 3 15	1 60	@ 3 25
PEAS—Canada, free, ℔ bu	1 15	@ —	—	@ 1 25
EGGS—Fresh, ℔ dozen	18	@ 20	20	@ 23
POULTRY—Fowls	14	@ 25	13	@ 20
Turkeys—℔ lb	16	@ 19	10	@ 15
Geese, ℔ pair	1 00	@ 2 75	1 25	@ 2 25
Ducks, ℔ pair	65	@ 1 00	60	@ 1 00
PIGEONS, ℔ doz	50	@ 2 00	1 00	@ 2 25
PLOVER, ℔ dozen	1 00	@ 1 25	Nominal.	
SNIPE, per dozen	30	@ 1 25	—	@ —
WOODCOCK, per pair	—	@ —	87	@ 1 12
SPRING CHICKENS, ℔ lb	—	@ —	25	@ 35
TURNIPS ℔ bunch	—	@ —	2	@ 4
CABBAGES—℔ 100	—	@ —	4 00	@ 7 50
ONIONS—℔ bbl	50	@ 1 75	2 00	@ 4 00
ONIONS, new Bermuda, crate	75	@ 1 00	1 00	@ —
POTATOES—℔ bbl	1 25	@ 2 00	1 50	@ 6 50
SWEET POTATOES—℔ bbl	2 00	@ 3 50	—	@ —
BROOM-CORN	8	@ 14½	7	@ 13½
LETTUCE, per bbl	2 00	@ 7 00	1 00	@ 2 50
RASPBERRIES, ℔ qt	—	@ —	7	@ 15
GOOSEBERRIES, ℔ bush	—	@ —	1 50	@ 2 00
CURRANTS, ℔ lb	—	@ —	6	@ 15
CHERRIES, ℔ lb	—	@ —	4	@ 14
WHORTLEBERRIES, ℔ bush	—	@ —	5 00	@ 8 50
STRAWBERRIES, ℔ quart	3	@ 15	6	@ 15
APPLES—℔ barrel	75	@ 2 25	1 50	@ 4 50
CRANBERRIES—℔ box	1 00	@ 2 00	—	@ —
GREEN PEAS, ℔ bbl	3 00	@ 5 00	2 25	@ 4 50
TOMATOES, ℔ crate	—	@ —	2 50	@ 4 00
SPINACH, ℔ bbl	75	@ 1 50	—	@ —
STRING BEANS, per bbl	3 50	@ 4 00	1 00	@ 2 50
CUCUMBERS, per bush. box	2 00	@ 6 00	50	@ 75
WATERMELONS, ℔ 100	—	@ —	10 00	@ 40 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
June 21	9,411	124	4,534	23,218	28,996	66,283
June 28	8,148	89	4,680	22,601	27,862	63,380
July 5	9,058	79	3,391	19,510	26,074	58,115
July 12	7,179	87	2,834	21,187	20,459	51,764
Total for 4 Weeks	33,814	379	15,442	86,516	103,391	239,542
do. *for prev. 5 Weeks*	41,296	379	22,336	97,838	138,598	295,447
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	8,153	95	3,860	21,629	25,847	
do. do. *last Month*	8,259	76	4,467	18,367	27,749	
do. do. *prev's Month*	9,237	106	3,042	18,964	31,132	

Beeves.—The market during the past month has been more than usually free from change. Prime stock has been always in demand, and has met a strong market; poor stock as usual has suffered when something must give way. Fine heavy steers are scarce, and have sold well all through the month, closing with an advance of ½c. per lb. on a brisk demand. The enlarged demand for this class fortunately helped the light common cattle which happened to be in poor supply. Closing prices were 13¾@14c. per lb. for extra and fancy cattle, to dress 59@60 lbs. the gross cwt., and a few reached ½c. higher. Common to prime native steers to dress 56 to 58 lbs., sold for 11½@13½c. per lb., and Texans and poor natives went for 8½@10½c. per lb. to dress 55 to 56 lbs. per gross cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
June 21	6½@14 c.	11¾@12¼c.	12 c.
June 28	7 @13¾c.	11½@12½c.	11¾c.
July 5	6¼@14 c.	11½@12½c.	12 c.
July 12	7½@14½c.	11¾@12¾c.	12¼c.

Milch Cows.—For this stock there has been a quiet market through the month, with slow sales. Prices are somewhat lower; $45 to $75 being realized at the close for fresh milkers. A lot of common cows from Ohio sold last week for $42 to $52 per head....**Calves.** There has been but a poor market for calves, especially for poor buttermilk veals, which have been almost unsalable. As we close there is a little better feeling, and a fair demand at good prices. Veals sold at 7@8½c. per lb. for good milk-fed and common to fair buttermilk calves at $5 to $12 per head. A lot sold at 6½. per lb.... **Sheep and Lambs.**—The worst market of the season for sheep and lambs was two weeks ago. Since then there has been a slight recovery, and fat stock moved off more briskly at 4@5½c. per lb. for prime sheep, and 8½@9½c. per lb. for lambs; 9⅞@10½c. was paid for choice State and Delaware lambs, and 9@9½c. for Canada lambs, of which the first arrivals of the season came to hand the last week....**Swine.**—Dressed hogs have been offered, and sales made were at 9½@9⅞c. for heavy, and 10c. per lb. for light

containing a great variety of items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ N.B.—The New Postage Law.—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

"Where Can I Get?" this, that, or the other thing, is the purport of a large share of the letters received at this office. Many of these are answered in our advertising columns directly, while those columns indirectly tell where the majority of articles can be had. Our friends should remember that implement dealers have the majority of useful implements; that the leading seedsmen have full stocks of seeds; that the nurserymen who have the enterprise to advertise, are wide awake enough to have all desirable things in their line; and so with other dealers. It is safe to assume that an enterprising man in any business, if he has an order for an article which he has not in stock, will procure it rather than lose a customer. Look at the advertising pages before writing to us. Of course we are willing to give information when our columns do not contain it. N. B.—When writing to an advertiser, say that you were induced to do so by seeing his name in the *Agriculturist.*

Downing's Landscape Gardening.—New Edition. The Orange Judd Company, 245 Broadway, N. Y. It is now some 30 years since this work was first published, and there can be no greater evidence of its value, than that a new edition should be demanded at this late day. Other works have appeared treating the same topics; many of the places chosen

to illustrate this, have fallen into neglect and are now hardly known; since it first appeared, the number of ornamental trees and shrubs has more than doubled, and the methods of the art have greatly changed, yet in spite of all these, the work is not out of date. The principles Downing set forth, his views of the beautiful and picturesque, which he gave with a grace and charm unequaled, remain true to the present day, and the work is now, and is likely to remain, one of the classics. In 1859, a few years after the sad death of the author, a new and enlarged edition was brought out, illustrated with numerous new engravings, and enriched by a copious supplement, by Henry Winthrop Sargent, Esq. From the time the work was written, to the appearance of that edition, the number of ornamental trees had increased wonderfully, and Mr. Sargent, a friend and neighbor of the author having at his place, Wodenethe, at Fishkill-on-Hudson, accumulated and tested every procurable novelty, was the one of all others to bring up this portion of the work to that date, and the supplement made the edition of 1859 of especial value. For the edition now ready, Mr. Sargent has prepared another supplement, which is not so voluminous as the former one, there not being so many new trees to describe. It is valuable as giving later experience, and that in especially disastrous years, with many plants that in 1859 were new and untried. So far as the practical part of the work goes, this supplement brings it up to the present time. We know of no work better calculated to encourage a taste for rural life, or where that taste is already formed, to properly direct it, than this. Price, by mail, $6.50

The Potato Beetle.—How far east has it reached?—We of course consider the Colorado pest as *the* potato bug or beetle. We hear from it well nigh the whole length of Long Island, and it is at Middletown, Conn., on the Connecticut River. We can not say that we shall be "glad to hear" of its being farther east, but it will be a matter of interest to know just how far it has progressed toward sunrise.

The Fountain Pump.—"W. W. B." The pump made by J. A. Whitman, Providence, R. I., is a really excellent affair, and we supposed that we had already said so, but find that we can not refer you to the item. We have not only used it ourselves, but have recommended it to our friends. A correspondent in Colorado was in need of a pump for her greenhouse, that could be sent her at low express charges. We advised the Fountain Pump, and it was found to be just the thing.

Strawberries at the Mass. Horticultural.—At the Strawberry Exhibition held at Boston, July 2nd, the first prize for four quarts of any variety, was taken by Hovey & Co. for Hovey's Seedling, which originated with them 40 years ago. It is remarkable that this variety, now so old that strawberry growers of the present day hardly know it by name even, and rarely seen in cultivation, should have carried off the prize. It shows that so far as quality is concerned, we have not surpassed this excellent variety. The introduction of Hovey's Seedling gave a great impulse to strawberry culture, and in rich, strong soil it gives large fruit of the highest excellence. On the other hand, if planted upon the light soils of New Jersey, where the great market supplies are grown, it is absolutely worthless. J. B. Moore took the second prize with Jucunda, and Warren Heustis the third with Col. Cheney. The exhibition was the largest of the kind ever held by the society, 116 dishes of strawberries being shown.

Crop to Plow Under.—"O. W. F.," Blackstone, Mass. The only crop that can now be sown for plowing under, is buckwheat. This may be sown at once, at the rate of six pecks of seed per acre, so as to have a thick growth. It may be plowed in when in blossom, late in August, but must not be cross plowed. The ground may be harrowed two or three times along the furrows, but carefully, lest the buckwheat be torn up. Rye may be sown early in September, and next year the operation may be repeated. Two fully grown green crops can not be plowed in in one year after rye is harvested; there is not sufficient time for it.

Ditching Plow.—"O. E. S.," Bath, Me. A plow for loosening the soil for ditching, or for subsoil plowing, as a temporary expedient for partial drainage, is made by Chamberlin & Sons, Olean, N. Y.

A Tight Stable Floor.—"S. E. K.," Eastham, (?). A substantial, durable, water-tight stable floor, and one impenetrable by rats, may be made by paving it with round cobble stones, and filling between them with hydraulic cement and sand, (four or five parts of sand to one of cement); when the cement is dry, saturate it with as much hot gas tar as it will absorb. A shallow channel to drain off the liquid, should be made in the center of each stall. At the rear of the stalls, running the length of the stable, should be a gutter, into which the other channels discharge. This floor may be washed, and kept very clean and sweet.

Depraved Appetite.—"J. M. H.," Fairfield Co., Conn. When cattle devour bones, rags, earth, and such matters, it is well to give them a good dose of physic; one pound of Epsom Salts dissolved in water, with an ounce of ground ginger mixed with it, would be beneficial, or a pint of raw linseed oil. A pint of linseed meal and two ounces of salt per day, should then be given to them, and if they still eat bones, a little bone-meal may be offered to them. A depraved appetite is generally caused by indigestion, and exists along with a general unthriftiness of appearance of the animal.

Foundation for a Rammed Clay Floor.—"A Subscriber." A proper foundation for a hard rammed clay floor, would be well rammed gravel. The foundation must be solid, and yet porous and well drained, so that the floor will not become moist from below.

New York State Dairymen's Association.—The next annual convention of the N. Y. State Dairymen is to be held at Norwich, Chenango Co., December 8th and 9th.

The Speakman Wire and Picket Fence.—Thos. H. Speakman, the manufacturer of a combination fence, made of wires and pickets, writes us in reference to some remarks made in the *Agriculturist* of June, about fences of wire and pickets interwoven. We have heretofore spoken favorably of the Speakman fence, and had no reference to it when we wrote of a claim to a patent-right on an interwoven fence. In the Speakman fence the pickets are not interwoven, but the wires are inserted through the pickets, which are thus strung upon the wires, and parties who have used it speak highly of it. The practice of simply interweaving pickets amongst the wires can hardly be considered as a novelty worthy of a patent, and we doubt if it would be worth paying a royalty for, in competition with a substantial fence, such as the Speakman fence undoubtedly is.

Baling Hay.—From our statement in regard to baling hay with the Dederick perpetual hay press in the *Agriculturist* for April last, it has been inferred that only 8 tons of hay can be placed in a common grain car. This is incorrect; this press will so bale hay that 10 tons can be put into any grain car. The Dederick press is thus made to meet the requirments of western packers, who need to ship 10 tons in a car. With steam power 20 tons per day can be baled with this press.

To Paint a Kitchen Floor.—"M. M. A.," Baraboo, Wis.—A kitchen floor may be stained of an agreeable and serviceable color, by coating it with a mixture of five pounds of French ochre, a quarter of a pound of glue, and one gallon of hot water. This should be put on hot, and, when thoroughly dry, covered with two coats of boiled linseed oil. The floor should be made smooth before it is colored.

Extracting Stumps.—"S. W. J.," Selma, Ala. To pull up stumps of newly felled trees, requires a very powerful machine, because the roots being all sound, hold fast to a large portion of the soil which must be lifted with the stump. The ground is also very much disturbed, and requires expensive leveling. We would rather sow a newly cleared piece of land to grass and clover, and leave it for a few years, if in a locality where grass and clover can be grown profitably, or otherwise cultivate the land in the best way possible, until the smaller roots have decayed. By waiting a while stumps can be extracted at much less cost than when the trees are just felled. A very good stump extractor is made by H. Chamberlin, of Olean, N. Y.

Books on Farming.—"L. N.," Augusta, Ga. There is not, and never can be, any one book, or any number of books, from which a farmer can learn his business. General principles of the art of agriculture may be learned in this way, but their proper application to the thousands of various circumstances of locality, soil, climate, markets, etc., depend upon the character or capability of the man himself. It is as in sailing a ship, a person may learn all about the science of navigation, ship-building, and meteorology perfectly, but if he does not "know the ropes" about the ship, he will be wrecked on his first voyage. So the farmer must "know the ropes" on his own farm, and then he can derive very valuable help from books and agricultural journals.

Poultry Yards.—"W. R.," Columbus, O. It is possible that a visit to the poultry yard of Mr. W. H. Todd, of Vermillion, Ohio, would furnish you an opportunity of seeing how such a yard is managed.

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Every Trial Trip Subscriber, who sends 75 cents for the *American Agriculturist* for six months, as above, may also select one of the **BEAUTIFUL CHROMOS,** offered on page 319, and it will be sent to him **free,** as there offered, (on forwarding the small sum named for mounting, packing, and delivery.)

Thus, a single dollar will secure the paper post-paid for six months, and a Mounted, beautiful Chromo, delivered, while the Chromo alone is worth MANY DOLLARS.

Another Use of the Crow.—"It is said," that crows will eat the Colorado potato beetle. We know it is their nature to devour insect larva, beetles, and worms, and it is not improbable that the story that they will eat potato beetles, may be true. It might be well to give them a chance, as well as other known insect-eating animals, as the skunk for instance, which certainly devours crickets, cockchafers, and other "bugs" in great numbers, and not attempt to drive them away, or kill them off. Certainly neither crows nor skunks, in all their depredations, have done so much mischief as cutworms and potato beetles have done this season, nor will it cost a tithe so much to prevent them from doing what little harm they may do, or are charged with.

Late Chickens.—"S. A. M.," Glencove, L. I. It is difficult and unprofitable to raise chickens hatched in August. They stop growing as soon as the cold weather arrives, and are not strong enough to resist the cold of winter. If they do survive, they consume several times as much as they are worth before spring. We would not allow any hens to brood now, but would break them up, and get them laying again. The eggs are worth more than the chickens.

Durable Stable Floor.—"E. E. P. T.," Boone Co., Ky. It is impossible to make a stable floor of cement alone, that will stand the trampling of horses that are sharp shod. The floor described and illustrated in the *American Agriculturist* of November, 1873, page 415, in which a pavement of cobble stones is filled in and covered with cement and gas tar, or asphalt, is preferable to any other that we know of.

Fish Seine.—"E. S.," Clinton Co., Iowa. Gilling twine, of which seines and other fish nets are made, is worth 50 cents a pound. It is cheaper to buy the nets ready made, than to make them by hand, even when the maker is expert at the business. They are now made by machinery in lengths of 100 feet, and 10 feet wide, and sold at $3 per pound. The weight of the net of course depends on the size of the mesh and the coarseness or fineness of the twine.

Fertilizers for Fall Sowing.—"S. N.," Loudon, Va. In the fall we need an active fertilizer, one that will push forward the young plants and enable them to become well established before winter. Phosphates are not generally required by a young plant, it is only when the seed is to be formed that the plant needs to store up this material. If superphosphates are applied in the fall upon soil containing lime, the excess of soluble phosphoric acid combines with the lime and makes an insoluble, (or only slowly soluble), phosphate which has no appreciable effect upon the crop. It is for this reason and not for any fault or defect of the fertilizer that it so often seems to be useless. Guano on the contrary is immediately active, and much more suitable for fall use than any other artificial manure. Superphosphate of lime should be applied in the spring, which is the season when it will be most useful to the plant.

Preservative for Fence Posts.—"P. C.," Hudson Co., N. Y. Crude petroleum is an excellent material for painting fence posts. It needs no admixture; it may be put on with a broad white-washing brush very quickly, and gives an agreeable brownish color to the wood.

The Butter, Cheese, and Egg Trade.—The statistics of the trade in butter, cheese, and eggs for the year ending May 31st, are reported as follows:

	Butter.	*Cheese.*	*Eggs.*
	Pkgs.	Pkgs.	Bbls.
Total receipts	1,046,584	1,905,978	455,447
Total exports	44,832	1,701,328	
Average receipts per month	87,215	158,831	37,953
Average exports per month	3,736	141,819	
Range of Prices.	Per lb.	Per lb.	Per doz.
Eastern	19@38c.	12¼@16¼c.	15½@30c.
Western	13@31c.	10 @15½c.	15½@30c.

Failing to Breed.—"S. H. I.," Ute Creek, N. M. The probability is that your hens and Berkshire sow fail to breed because they are too fat. If the condition cannot be conveniently reduced any other way, a few doses of epsom salts might be of service to the sow. As to the hens, we would get rid of them, and procure some Leghorns or Brahmas, which are persistent layers, even when fat.

Relative Cost of Water-Power and Steam.—"W. W. S.," Mifflin Co., Pa. The original cost of the most expensive system of water-powers, such as are used at Lowell, Mass., and at the water-works at Philadelphia, varies from $100 to $200 per horse-power. This includes canals, dams, and costly turbine wheels. For wooden dams, and overshot or lower grade iron wheels, the cost would not exceed $50 per horse-power. Steam-powers, inclusive of engine-houses and foundations for 100 horse-powers, cost about $300 per horse-power, and for 300 horse-powers and upwards from $115 to $150 per horse-power. But in operation the cost of water-power is from one-fourth to one-tenth that of steam-power, with coal not over $6 per ton.

Ayrshire Register.—We have received a copy of the North American Ayrshire Register, Vol. 1, edited by E. Lewis and Joseph N. Sturtevant, of South Framingham, Mass. The volume contains over 500 entries, and every effort has been made by the very able and conscientious editors to do their work so thoroughly, that the register may be a true record of thoroughbred animals, whose pedigrees show them to be without doubt or suspicion. The editors make the valuable suggestion that breeders of Ayrshires present a copy of the record to every purchaser of their stock, who does not already possess one. This will certainly have the effect to increase the public interest in the record, and encourage the desire of new purchasers to keep their stock pure.

Cream Cheese.—Mrs. "S. N.," Phila. Pure cream cheese is made for the French and English markets in small rectangular cakes, about 5 or 6 inches long, 3 or 4 inches wide, and 1½ to 2 inches thick. They are eaten fresh, and are very delicious. The milk is set for about 15 or 18 hours, or until the cream has formed a somewhat tenacious skin over the milk. The cream is then carefully removed, and put into a muslin bag to drain for about 20 hours, when it is placed in wooden molds, open at the bottom and the top. A layer of rushes is placed in the bottom of the mold on a clean table, and another layer above the cream. A board is then placed over a row of the cheeses. This is done in the evening, and in the morning they are taken to market. No salt is used.

Calculating Machines.—"R. E. G.," Rock Hill, S. C. A list of the various calculating machines that have been invented since the 4th century, B. C., up to the Babbage calculator of 1833, and the machine of G. & E. Schentz, of Stockholm, invented in 1853, may be found in the new Appleton's Cyclopedia. One of the last mentioned machines is now in the Dudley Observatory, Albany, N. Y. A very useful calculator, consisting of concentric circular plates, is sold at the philosophical instrument shops, as is also the ordinary slide rule, by which many calculations in multiplication and division may be made with great rapidity.

Sales of Short-Horns.—The following important sales of Short-horns have occurred since our last report. At Toronto, Canada, on June 16th, six head from the Hillhurst herd of M. H. Cochrane, of Montreal, and 34 head from the herds of Messrs. Miller & Beattie, of Ontario, Canada, were sold. The 6 head from Hillhurst sold for $30,850, an average of $5,141.67. Airdrie Duchess 5th, a seven months old heifer-calf, sold for $18,000 to Avery & Murphy, of Michigan. 5th Duke of Hillhurst, a two months calf, was taken at $8,300 by an association of breeders from Tennessee. The 34 head, all cows and heifers, of Miller & Beattie, brought $41,730, an average of $1,227.35. These prices are all in gold. No bids were made for the bulls offered. Of less fashionable stock there have been sales of 48 head for John Bond, Abingdon, Ill., at an average of $165 per head; of 83 head for S. Cobbin, and Green & Morton, at Cedar Rapids, Iowa, at an average of $207; of 52 head for W. Warnock, of Cynthiana, Ky., at Cedar Rapids, Iowa, at an average of $218; of 73 head for Joseph Scott, of Ky., at Galesburg, Ill., at an average of $197; 9 head for J. S. Latimer, also at Galesburg, for an average of $160, and 9 head, at the same place, for Niles Bros., averaged $132.

Millet.—"J. A. L.," Van Buren, Ark. If millet is raised for the seed, it may be thrashed either by the flail or by the thrashing machine. The straw is then of little use except for litter. If it is grown for fodder, it should be cut when in blossom, and cured as hay is generally cured, but without much exposure to the sun. It is best cured in cocks. The seed after it is thrashed out, may be cleaned in the ordinary fanning mill, by using the same sieves as for cleaning clover seed, and blowing with a light draft.

Sowing Clover in July.—"H. R.," Essex, Ill. If the season is not too dry, a good catch of clover may be got by sowing in July, or early in August. The trouble is that the late summer drouths or early fall frosts may injure the young plants. If these are escaped, the catch will probably be as good as a spring sowing. We have had an excellent catch of clover by sowing with buckwheat in July.

Profit of a Berkshire Boar.—"R. G. H.," Camden, N. Y. There is no doubt that the purchase of a good Berkshire boar, for your own as well as your neighbor's use, would be profitable. A boar will easily sire 100 to 200 pigs in one season, and if each one is worth only one dollar more than a common pig, the cost of the boar will be repaid several times over the first season. The value of any pure bred animal to a farmer, if estimated in this way, will be seen to be much greater than its cost. The better the animal that is selected, the greater the probable profit from it. The Berkshire has a good ham, and a deep side for bacon, with small offal. It excels in these points.

SUNDRY HUMBUGS.—In former articles we have alluded to the fact that some humbugs are very difficult to treat. One class of these is where the probabilities all indicate that a concern is a humbug, but the evidence comes just short of being proof. Another class is those relating to medical matters of a kind which will not allow of a full exposure without the use of terms hardly proper to print in a family journal. Still another are those schemes or occupations in which so great is the temptation that a large share of those engaged in them are swindlers, and to denounce these as a class is unjust to the few honest men engaged in the pursuits, which of themselves are honorable and legitimate. Under this last head are included lightning-rod men and tree-peddlers, or nursery agents, of whom more than any others, except quack medicine chaps, are the complaints most numerous. Letting the lightning-rod men pass for the present, let us define

OUR POSITION AS TO NURSERY AGENTS AND TREE-PEDDLERS.

Complaints of these have been especially numerous this year, and in view of the rascality of some of the transactions, we have said that it would be safest to have nothing to do with the whole lot. Some of our nursery friends think this rather too sweeping, as they have agents who they know to be perfectly honest men. We must admit that it is hard for such to be classed with swindlers, and that there are those who do not deserve it, we are well aware. There was one who for ten or more years represented one of the large nurseries in the territory around New York City, who could be implicitly trusted, and one who was so sure of his own position in the community, that he liked to have us show up the rascals in the trade. Now what shall we do? We have the community to protect against 19 rogues, and to avoid injuring the business of one honest man. It is the true interest of every fair-dealing nurseryman that these swindles should be stopped, and we are willing to co-operate in any feasible plan which shall encourage honest agents, and at the same time protect the community from the dishonest ones. Now, gentlemen, what do you propose? One of your reasons for employing traveling agents, is that it encourages tree-planting, and that persons are by personal application induced to plant trees who, if left to themselves, would not do it at all.—Well, this is just what we would encourage, and if we could cause 10 trees to be planted where one now is, we should gladly do it, but then we wish the trees to be of the right kind and true to name, and not the refuse of nurseries labelled promiscuously. We have been at the nurseries and know how this thing is managed. Smith, the peddler, calls himself an agent, he gets orders for trees from Jones' nursery. At the digging season he goes to Jones and buys certain blocks or odd rows of trees; he has his own men to dig them, he takes them to some vacant place, labels them as may be, packs them in lots to suit his orders, and all that Jones has to do with the matter is, the trees grew on his ground, and he sold them. Several years ago we were at a large nursery, and learned the opinion of that concern, of peddlers. A lot of several acres was being surrounded with a high fence, and upon inquiry we were informed that the enclosure was for the peddlers, who were to be rigidly excluded from the regular packing yards and sheds, as the losses from theft by these men must be stopped. Now it is due to themselves and due to the public that the nurserymen devise some plan by which, when an agent claims to represent a particular nursery, the one who would purchase trees shall know that he is duly authorized; moreover, the purchaser should have some assurance that the trees when received did really come from said nursery, and that the proprietors of that nursery are responsible for their being the trees ordered, and that when they left the nursery they were correctly labelled. The purchaser has as much right to a reasonable assurance that he gets what he pays for, as has the seller that he will get his money. We should like to have those nurserymen who think our remarks about agents too general, tell us what provision is made to secure the purchaser in this respect....If you will show us any way by which the farmer can tell between the legitimate agent and a swindler, we will gladly welcome it, and give it the widest publicity....We repeat our caution to order nothing for which unusual claims are made. If a peddler offers things which no one else has, or things not before heard of, such as "self-pruning grape-vines," strawberries which grow on "bushes," peaches grafted on the

"French willows," or pear-trees on the maple, or any such stuff, don't believe him about these, and be very sure that whatever else he may have is likely to be bogus....Here comes a complaint all the way from Virginia about a

DOLLAR-STORE IN BOSTON.

The writer's daughter sent $21, and "received a miserable lot of cheap stuffs and imitations, any and all of which can be bought at any cross-roads store for the same, or less"—then there was the cost of freight and boxing added. The letter, and the New York references given, show that the writer is a gentleman of intelligence and good social standing. Now, when such as he can be induced to suppose that any one can sell more than a dollar's worth for a dollar, we do not wonder that the less intelligent are so often swindled. We do not see how we can help our friend; his money is past recovery, but he can console himself with the thought that the lesson may be worth all it cost to the daughter. There is at least one family in Fairfax Co. to whom all such schemes will hereafter appeal in vain....The alertness with which the sharps seize hold of every possible bait to catch the flats, is shown in the case of a

BLACK HILLS MINING COMPANY.

The vague reports that gold had been found in the Black Hills were enough. Notwithstanding that the government had given warning that all whites would be kept out by the military forces, the word "gold" was sufficient to start with. Circulars containing every report and guess at its occurrence in the Black Hills, are sent out, inviting subscribers to a mining company—only $10 a share, and "Fortunes for the Original Subscribers"—and we hope they may get them—the fortunes we mean. The latest account from the Black Hills does not much encourage this little scheme for getting $10 out of the credulous....A friend in Kansas who received one of the Geneva watch circulars—by the way, Geneva watches "is riz," they used to be only $4, but now $8—says that if the vender will take dead grasshoppers for a watch, he will trade. Don't do any such thing, Mr. Kansas man. In time of scarcity you could eat the grasshoppers, but we don't know what earthly use the watch would be.

MEDICAL MATTERS

are not at all lively under a July sun. Several have inquired about one "Dr." Price, who is sending around circulars, setting forth, though not in the precise words, that he is "death on fits," accompanied with a form of agreement that he will return the $20 if the patient is not cured. We are asked if he is responsible, and will return the money in case of failure to cure as agreed. We do not know, and look upon that as a matter of secondary importance. The great point is, what kind of a "Doctor" can one be who will "guarantee" a cure of any disease? or who will say of any medicine, "it will surely cure any case," and all this without even seeing the patient. If one who does this was educated as a doctor, he has lost all claims to the title.

ABOUT PATENT MEDICINES.

A correspondent, "M. N.," Crawford Co., Ill., writes that he considers our humbug exposures of great value, but cannot agree with us in denouncing all "Patent Medicines" as humbugs, and mentions some which he thinks should be excepted, especially a certain "Pain Killer." As our friend may be taken as a representative of a class of intelligent persons, who hold similar notions, we give his letter the respectful consideration its evident sincerity deserves. We may state that but few of the so-called patent medicines are patented at all. If it were so, every one could know their composition, and all secrecy—in which their great value to the proprietor consists—would be at an end. Our objections to these secret medicines are several, but first and mainly because they *are* secret. We object to taking or giving anything whatever, the composition of which is not fully known. We would not treat a dumb animal or a plant with an unknown drug, much less a human being. These medicines may be divided into two classes; those which possess really active properties and have a positive effect when administered; and those which are practically inert, or consist of some stimulant or tonic, and act more upon the imagination through the remarkable circulars which accompany them than by virtue of any medicinal agent they contain. This last class are the worst swindles, as they give a stuff that costs a mere trifle for a high price, but many of them are so nearly nothing that the harm they do is more to the pocket than to the system. The whole class may be set down as worthless trash, and in the main are agents to draw money from the nervous, timid, and credulous for the benefit of a few ignorant pretenders, who, with their flashy diamonds, fast horses, and fast life generally, are a sad blotch upon our civilization. As to the other class, those medicines which have some potency, we object to these because they are powerful, and those who use them are working in the dark. Morphine is a useful remedy, but should always be given knowing that it is morphine, and just as dangerous as it is useful. Not one mother in a hundred would apply a solution of morphine to the mouth of her teething babe did she know that it was morphine, but mix it up with sugar, and call it somebody's "Soothing Syrup," it is used without a question, and thousands of little white gravestones all the way from the Atlantic to the Pacific attest its soothing power. Certain worm lozenges were popular 30 years ago, and their advertisement was headed "Children Cry for Them," and hundreds of parents who would have been horror-stricken had their physicians prescribed a dose of calomel, fed their children on these lozenges. The writer, at a public lecture exhibited the quantity of calomel he had separated from a box of these lozenges, and had the satisfaction of checking their sale in that city. Now while we do not deny that in some cases these remedies may be useful, we emphatically and wholly object to them on account of their secrecy. They may be hurtful, and are always needless. When we say needless, we mean in the secret form in which they are put up. None of this active class of secret medicines contain *anything of any medicinal value* that is not to be found at all decent drug stores, or which is not at the command of every one. Compounds of common drugs put up as secret remedies, are sold at a very high price, as they must be to pay for the enormous advertising and all the machinery of agents and circulars, and the customer buying them in this form pays many times more for them than he would to get them under their proper names. Take the "Pain Killer" in question. The writer was for many years a druggist, and sold the original maker of the stuff the drugs from which he compounded it, and knows that there is nothing in it that is not within reach of every one. Every family should have a few of the leading simple remedies at hand to use in an emergency, and all intelligent persons should know their properties as well as what to do in ordinary illness, but we do not think any one has a right to administer to another an article of unknown composition. These are in brief some of the reasons why we class them all, and without any exceptions, as humbugs....We quite agree with what our correspondent says about

SELLING LIQUOR IN DRUG STORES,

which is undoubtedly a great and growing evil, but this hardly comes under the head of humbugs....Medical humbugs have been distressingly tame of late; we were looking over our budget, thinking how refreshing it would be to get hold of some "soul-harrowing" narrative, something say in the Eddie Eastman style, that would make cold shivers run down one's back, and his toes to tingle, when we came across the next best thing to a new friend, a long absent old one.

OLD MOTHER NOBLE,

bless her dear old heart, turned up once more! We thought the good old critter had gone the way of all good old mothers, but here she is as fresh as she was in 1868, and tells the same dear, delightful story. There is the same picture of the old stone-wall where this remarkable discovery was made, with the well-sweep in the distance. Ah that we should have had to dispel all this romance and tell what the stuff was made of! So Huyler still waves, but Clark Johnson, M. D., where is he?

Plants Named.—B. Hassett, Iowa. The grass sent is *Poa pratensis*, or Kentucky Blue Grass. You are right in supposing it would make a good lawn. It is one of the best lawn grasses we have...."A. D.," Port Huron, Mich. The plant is a Meadow-Rue, *Thalictrum purpurascens*, and very common.

An Erratic Rose.—"P. R.," Saugerties, sends a specimen for us to "make out what it is, and give the cause."—It is a rose, on which the end of the stem not content with producing one flower, has pushed upwards and has prepared to produce another flower. This is not at all rare among roses; we see more or less cases of it among our own every year, and a few years ago we gave a figure of one which had repeated this, and might be called a three-storied rose. Some bushes do so habitually; we once knew one which bore no other roses. As to the cause—we can no more tell that than we can why the rose is double. In cultivation we have encouraged an unnatural condition, as we like double roses better than we do those in their natural state, which is single; but it is no more strange that the stem should take on an unnatural development, than that the stamens should turn into petals, as they do in double roses.

Value of Goat Manure.—"B. P. T.," Placer Co., Cal. The value of goat manure so far as we know, has not been thoroughly investigated. So far as it has been experimented with, it has been found very similar to the manure of sheep, and it is probably of equal value. Sheep manure is rich, and readily ferments and decomposes. When fresh, it consists of 68 parts of water, 19.3 per cent of organic matter, and 12.7 per cent of salts in 100. Payen & Boussingault estimate that equal effects are produced by 36 parts of sheep manure, 54 of horse manure, 63 of pig manure, and 125 of cow manure. In field experiments sheep manure has given a nine-fold increase of crop, and horse manure, seven-fold. It has also been found in effect to come next in value to ox blood. In our own experience we have found the manure from the sheep-yard to give better crops than any other.

Leaf-Mold as Manure.—"T.," Newcastle, Cal. Leaf-mold is of no use unless thoroughly rotted. It is then cool and moist and very suitable to mix with the soil about the roots in planting fruit-trees. Rotted cow manure is very useful for this purpose. Alfalfa can scarcely be grown in an orchard without injury to the trees. It is a deep-rooted and long-lived plant, and will exhaust the subsoil too much for the good of the trees. Where clover cannot be grown, we would keep the soil of an orchard clean, or in hoed crops.

The "Wyandotte" Corn.—"T. A. B.," Little Rock, Ark., writes that some years ago he had a kind of corn known as the Wyandotte, which produced six or seven stalks, each bearing an ear, from one grain. He wishes to know where he can procure seed of this corn now. As we are not acquainted with this corn, which should be a very valuable kind, we should be glad to hear from any of our readers who may know of it.

To Train a Horse to Trot.—"H. H. R.," Peekskill, N. Y. The Orange Co. Stud Book contains many useful hints as to training and managing horses. It can be had at this office, or sent by mail, for $1.00. The information contained in this book, may perhaps answer your purpose; if not, and you believe your horse to be worth the cost, the best plan would be to employ a professional trainer.

Drilling Grass Seed.—"W. E.," Cecil Co., Md. It is a saving of trouble to drill the grass seed along with the grain, but we do not like the plan, as it crowds the young grass too much. We would rather take the extra trouble to sow the grass by hand or by broadcast sower, immediately after the ground is harrowed, and while the soil is fine and mellow, and then drill the grain and roll. We have always got a better stand in this manner, than by sowing with the drill.

Poisoned Cats.—"A Mississippi Subscriber." The symptoms described, viz., dullness, loss of appetite, moping, vomiting of offensive matter, would lead to the supposition that the cats were poisoned by some means. Cats have few or no diseases, except in their early life, and are remarkably hardy; nor do we know of any reason except the one indicated, for the unhappy fate of your seven pets. There is no book known to us which treats of the management of cats. The only remedy we ever heard of being given to these animals, is sulphur in milk, at the period when they are passing through their youthful troubles. A few pinches of flowers of sulphur is stirred in milk and given to them.

How to Use a Dead Horse.—"J. E. E.," Carrollton, Ga. A dead horse or other animal should be skinned, and roughly cut up into as many small pieces as possible. A plot of ground a few rods square, should then be plowed deeply, and the carcass thrown upon the soil in the center of the plowed ground. Some freshly dry-slacked lime should then be scattered upon the heap, so as to cover it thinly but wholly. The loose earth is then to be heaped over it a foot in depth, and the pile covered with boards, so that dogs can not get at the heap and tear it up. If the least smell is perceived, more earth should be thrown upon the heap. In three months the heap may be dug over or turned over with the plow, and well mixed. The bones that can not be broken up should be taken from the heap, and the fine matter will be worth at least $20 per ton, to use in the hill for corn or cotton. The larger bones may be broken up and buried among the roots of grape vines or fruit trees.

Time for Cutting Timber.—"A. W.," Cecil Co., Md. We have found that timber cut when in full leaf, and not trimmed, but left with the leaves upon the tree until they are dried, will be more durable than when the trees are cut in the winter. This is the case with pine as well as hard wood. In sawing into lumber an extensive wind-fall, which was blown down in August and lay for several years, the timber was found perfectly sound, while some logs which were cut in the winter, and lay for two years only, were considerably affected with dry rot. If the logs are thrown into water soon after they are cut, the lumber is much improved as to durability, and will season very quickly after it is cut.

Basket Items continued on page 317.

A House Costing $8,000.

BY S. B REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a large and convenient house, arranged to embrace nearly all of the modern improvements. Figure 1 is the perspective, engraved from a photograph of a house recently built from these plans, for Mr. J. M. Peck, at Flushing, L. I. The general characteristics of the exterior are expressive of refinement and cheerfulness. There is considerable novelty in some of the outlines and details of construction. It will be seen that the Tower is five stories high, or two stories above the attic of the main house, affording a lofty outlook. All the long horizontal lines of cornice are broken up by truss-heads, which are ornamental in themselves, and give relief from the depressing appearance of such long lines. The Dormer Windows of the main house have projecting pediments, with turned columns resting on the outer edge of the main cornice. The Inclosing of this house is the same as that described in the last number of the *American Agriculturist*. The Mansard part of the main roof and tower is covered with dark slate, laid on sound boards, covered with felt. All other roofs are tinned in the best manner....The **Cellar** extends under the whole house, and has outside and cross-walls of hard brick, which, with the chimneys and area, are built as described last month, (page 253.) A *Furnace* is put in at *F*, and enclosed with brick, and 10-inch tin pipes are provided to convey hot air to the parlors, library, dining-room and hall of the first story, to five rooms in the second story, and to the tank-room in the attic story....The **First Story** contains a large Hall, Parlor, Library, Dining-Room to be used as a Living-Room, Kitchen, Butler's and other Pantries, Wash-room, two flights of Stairs, the principal one in the main hall, and a private one adjoining the wash-room. The Main-Hall is 7 feet wide, and is entered from the piazza through heavy front and vestibule double doors. The Front Doors are full hight, and have quarter-circle plate glass "sky-lights" in them. The Vestibule Doors have plate glass upper panels, with transom, and half-circle head-light. Double Doors open from the hall to the parlor and to the dining-room, and large Sliding Doors separate the parlor from the library. The *Dining-Room* has a large Bay-Window, Marble Mantel, China Closet, and adjoins the butler's pantry. The *Kitchen* is arranged with such conveniences as would delight the most enthusiastic housekeeper; has large Closets, Range, Sink, cold and hot water, adjoins the wash-room, cellar stairway, and private passage, and communicates with the dining-room through the butler's pantry. The Range has an elevated oven, warm closet, and water-back. To secure a perfect ventilation, a large register is placed in the flue of the chimney, which creates so strong a draft that the air in this room can all be changed in a few minutes. The left-hand flue of the kitchen chimney contains the pipes that convey warm air from the furnace to the bath and tank rooms. The Wash-room contains the copper boiler and wash tubs, and has a closet under the private stairs. The Sink is large, and is provided with large drain-boards at each side, and a row of closets underneath. The Butler's Pantry has complete fittings of drawers, shelving, oval copper wash-tray, and washstand with marble top, and is provided with cold and hot water. A Passage or private hall is arranged to connect with the principal hall, kitchen, private stairway, and rear entrance; by this plan the principal housework can be done without intruding in any way on the main hall or principal rooms of the house....**Second Story**—This story contains a good sized Hall, 4 large Chambers, a private Study, Bath-room, Store-room, six large Closets, and private Stairway. The principal flight of stairs is made continuous from the first floor to the attic; an arch is placed across the narrow part of the hall in this story, near the first landing of the principal stairs, and is in full sight from the hall below, imparting a cheerful and finished appearance....**Attic,** *or Third Story*—This Story is finished throughout, and is divided into a Hall, two large Chambers, with Closets to each, Tank-room, and large Attic. The Stairs to the tower are closed in, and have a door at the foot. The hall is lighted through a sash-door from the tank-room. The large attic-room at the right has two doors opening from the hall, and may be divided into two rooms if required. A large upper room, where noise will not disturb the occupants of the lower parts of the house, will always be found valuable for school and play-room purposes, especially in cold or stormy weather, and when supplied with a table, benches, maps, books, and apparatus for instruction and entertainment, will afford the younger members of the family opportunity for development and exercise....**General Remarks.**—Many people, who would adopt this general plan, might conclude that the style of the exterior is too elaborate and costly. It must be obvious to any one that the internal arrangements, and ground plan of houses, should be made to conform to the necessities and requirements of those who are to occupy them; and these parts being of the first importance, should receive the first consideration. Such *ground plans*, however, do not decide, or even indicate, the style, character, or expense, of the outside *dress* that may be put upon them. Different people have entirely different characters, tastes, and resources, and the external appearance of their homes, should signify those general qualities and characteristics, and also

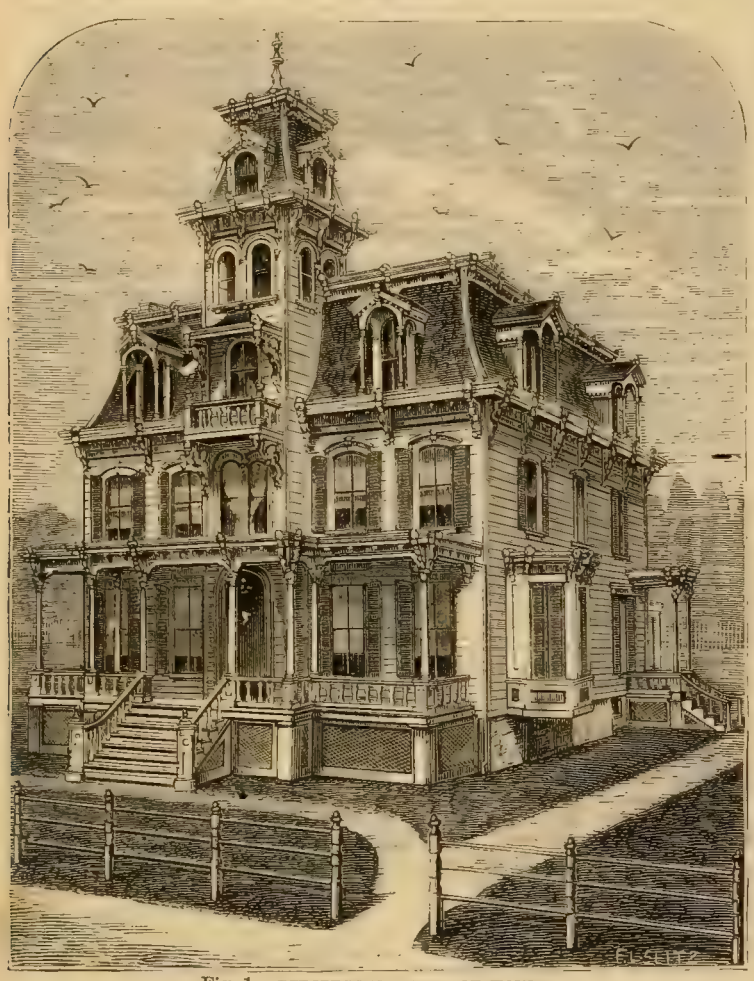


Fig. 1.—PERSPECTIVE VIEW OF HOUSE.

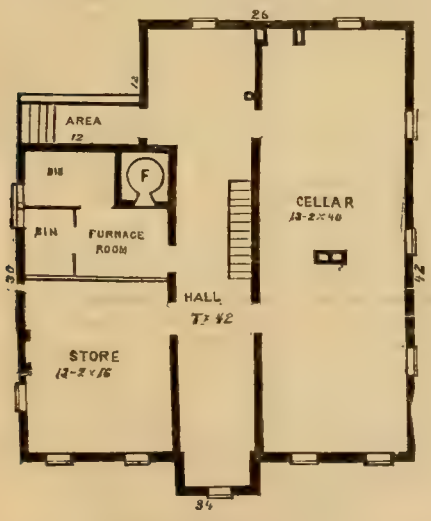


Fig. 2.—PLAN OF CELLAR.

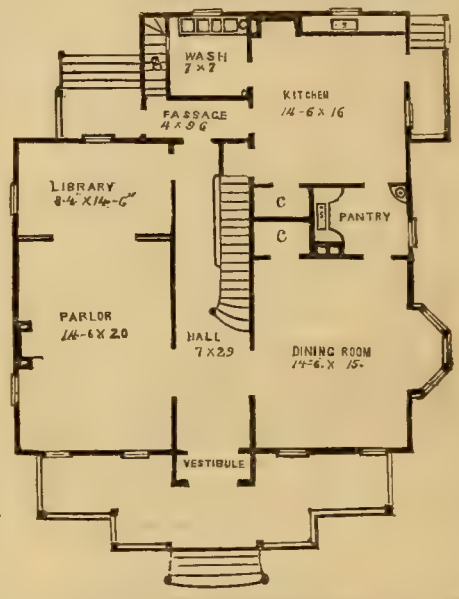


Fig. 3.—PLAN OF MAIN FLOOR.

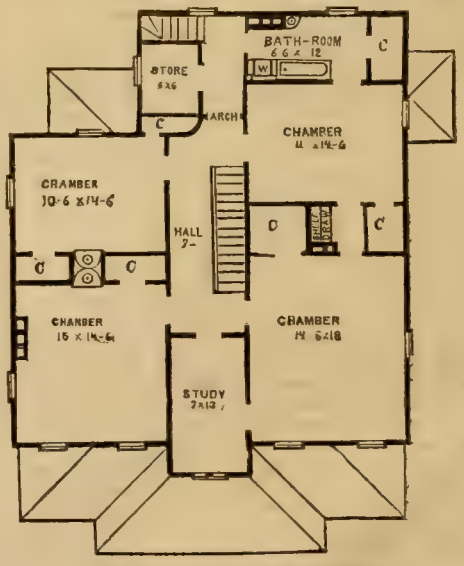


Fig. 4.—PLAN OF SECOND STORY.

accord with, and conform to, all the circumstances of location, and relation....The **Estimate** in detail provides for all work to be done in a substantial manner, of the usual materials. The exterior and interior wood finish is of clear pine lumber. The *Plastering* is hard-finished, on two coats of brown mortar. Appropriate *Cornices*, *Centers*, and *Panels*, in stucco, are intended for the hall, parlor, library, dining-room, and the two front chambers in the second story. *Gas*-pipes are inserted in the frame-work of the house, with connections arranged for 37 attachments. These are easily put in during construction, and even when the house is located far from any city or village having gas, there is strong probability that ere long we shall have convenient apparatus for making and supplying gas to isolated dwellings....**Plumbing** is provided as described in the last *American Agriculturist*, except that the plumbing required for the butler's pantry is here added. *Bells* are put in, with their wires running through zinc tubes concealed in the walls.

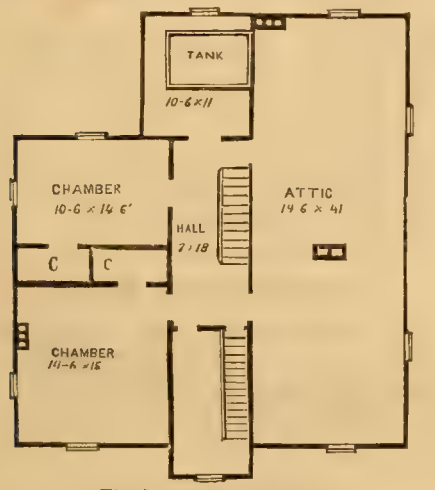


Fig. 5.—PLAN OF ATTIC.

The front-door pull leads to a gong in the kitchen. The dining-room has a bell leading to the schoolroom in the attic. Each chamber, in the second story, and the bath-room, has a bell leading to the kitchen, and the largest chamber has a bell leading to the attic. *Speaking*-tubes are provided for communication between the second story, hall, and bath-room, with the kitchen....**Painting.**—The body of the outside is in warm-gray; the principal outside trimming in pure white, with thin separating lines in light drab, and blinds in dark-bronze color. All wood, tin, and brick work, usually painted, both inside and outside, has two coats of the best lead and oil. All doors are grained—and all hard-wood, such as stair-rail, balusters, and door-saddles, are rubbed in oil.

216 yards Excavation, @ 30c. per yard	$64.80
32,000 hard Brick, @ $9 ℔ 1000	288.00
6,000 pale Brick, @ $5½ ℔ 1000	33.00
Materials for Plastering, and Lath	300.00
70 feet Stone Steps and Coping, @ 30 c.	21.00
Labor for all the mason work	600.00
13,258 feet Timber, @ 2¼c. per foot	298.30
viz. 1 Sill, 4x8 in. x242 ft. long. 12 Posts, 4x8 in. x36 ft. long.	
1 Tie, 4x6 in. x 484 ft. long. 1 Plate, 4x6 in. x 360 ft. l'g.	
2 Posts, 4x8 in. x 42 ft. long. 112 Beams, 3x8 in. x16 ft. l'g.	
2 Posts, 4x8 in. x19 ft. long. 56 " 3x8 in. x22 ft. l'g.	
1 Deck Plate, 3x8 in. x156 ft. l'g. 32 " 3x8 in. x12 ft. l'g.	
6 Hips, 3x10 in. x 22 ft. long. 28 " 3x8 in. x 8 ft. l'g.	
1 Sill, (Piazza) 4x7 in. x114 ft. 8 " 3x8 in. x18 ft. l'g.	
1 Plate " 3x8 in. x 90 ft. 52 " 2x6 in. x13 ft. l'g.	
1 Beam " 3x6 in. x 60 ft. 1 " 2x7 in. x28 ft. l'g.	
300 Joist, 3x4 inches x 13 feet long, @ 22c. each	$66.00
350 Wall Strips, 2x4 inches x13 feet long, @ 16c. each	56.00
928 tongued and grooved Sheathing boards for sides and roofs, @ 25c. each	232.00
300 pounds Tarred Paper, @ 5c. per lb	15.00
663 Novelty clear Siding Boards, @ 30c. each	198.90
416 feet main Cornices, Water Table, Corner Boards	416.00
29½ Squares of Tin Roofing, @ $10 per square	295.00
17 squares of Slate, (no openings allowed) at $10 p. sq.	170.00
13 Cellar Windows, complete, @ $12 each	156.00
1 Bay Window complete	160.00
30 Windows, first and second story, and Tower, complete, @$17 each	510.00
13 Dormer Windows, complete, @ $23 each	299.00
3 Piazzas, (except tinning,) complete	400.00
1 Balcony, (except tinning,) complete	35.00
1 Hood, (except tinning,) complete	50.00
480 Flooring Boards, 6 inch, @ 25c. each	120.00
160 Flooring Boards, 9-inch	46.00
Stairs, complete	200.00
14 Closets and Pantries, complete	130.00
50 Doors, complete, @ $15.20 each	760.00
4 Marble Mantels, complete	125.00
Furnace, and Range, (set and piped,) complete	400.00
Plumbing, complete	300.00
Painting	400.00
Carpenter's Labor, not included above	800.00
Cartage, average one mile	115.00
Total cost of materials and construction	**$8,000.00**

Science Applied to Farming.—VIII.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

Saving and waste in feeding.—Value of Nitrogen in Food.

Several farmers have written to me, and others have called at our laboratory to talk about the value of nitrogenous foods for stock, and how to use them. And Mr. Harris in "Walks and Talks" for July, has almost thrown out a challenge for more experimental proof of some of the theories advanced in this series of articles. This is quite fair and right. No theory is worthy of acceptance unless it is based upon a solid groundwork of fact.

Mr. Harris feeds his sheep all the straw and cornfodder they will eat. But this is not rich enough to make them grow, or to fatten them as rapidly as he would like. "Now," says Mr. Harris, "what the straw and cornstalks lack, is nitrogen (albuminoids). To supply this, then, I should add materials rich in nitrogen, and since beans, peas, and malt sprouts contain about twice as much albuminoids as corn, they ought, if this theory be correct, to have double the value of corn for this purpose." But Mr. Harris has his doubts on this point, and wants to know "whether it has been really proved by actual experiments, that, in such a case as I mention, peas or beans are much more valuable than Indian corn?"

I am not aware of any experiments to test this special question. This is indeed one of the many problems for the solution of which Experiment Stations in this country are much needed. The evidence now at our disposal is rather of the cumulative kind, and is involved in certain general principles for which we have a great deal of experimental proof. One of these general principles is this: Economy in feeding requires that the rations contain food ingredients—albuminoids, carbo-hydrates, fats, etc.—in such proportion as correspond to the specific demands of the animals; otherwise there will be waste. This has been shown by many series of experiments in the European Stations. The following, performed under the direction of Prof. Henneberg, at Weende, in Germany, is an example: Two oxen, in good, moderately fat condition, at rest in the stall, were fed with rations such as were found to keep them in the same uniform condition, as shown by the scales. A certain ration, (I), was fed for a certain period, the weight of the animals and the amount and composition of food and excrement determined by accurate weighings and analyses. At the end of the period the food was changed, and another experiment, (II), begun, and so on through six months with eight sets of experiments.

Table **13** gives the rations fed out during six periods of the series, describing the materials of which each daily ration was composed, the amounts of nitrogenous and non-nitrogenous materials it contained, and the ratio of these to each other. The cost of each ration is also added. The prices at Weende, in gold, at the time, being for clover hay about $8.50 per ton; for oat and rye straw, $5.50 per ton; and for turnips, $2.15 per ton; and for rape cakes, $1.07 per cwt.

Table 13.

DAILY RATION PER 1,000 LBS. OF LIVE WEIGHT OF THE ANIMALS.

		Containing lbs. of Albuminoids.	Containing lbs. of Carbo-hydrates (and Fats.)	Ratio of Albuminoids to Carbo-hydrates.	Cost of Daily Ration.
		lbs.	lbs.		
(I)	17.5 lbs. clover hay	1.95	7.39	1 to 3.8	9¾c.
(II)	11.4 lbs. oat straw, 43.6 lbs. turnips	.87	9.13	1 to 10.5	10¼c.
(III)	12.6 lbs. oat straw, 25.6 lbs. turnips, 1 lb. rape cakes	.91	7.77	1 to 8.5	8½c.
(IV)	3.7 lbs. clover hay, 13 lbs. oat straw, .56 lb. rape cakes	.99	7.16	1 to 7.2	7 c.
(V)	2.6 lbs. clover hay, 14.2 lbs. oat straw, .52 lb. rape cakes	.91	7.20	1 to 7.9	6¾c.
(VI)	3.8 lbs. clover hay, 13.3 lbs. rye straw, .57 lb. rape cakes	.99	6.82	1 to 6.8	7 c.

Looking down along the first column of figures we notice that ration (I) contained nearly 2 lbs., (1.95 lbs.), of nitrogenous substance, while the others contained generally about $^{9}/_{10}$ lb. The $^{9}/_{10}$ lb. of albuminoids in the other rations was sufficient. The clover hay ration served the animal no better than the others, and the extra pound of nitrogenous material was then, for maintenance of the animals, superfluous. So in ration (II) we have the other extreme; an appropriate amount of nitrogenous material, but, as the column shows, 9.13 lbs. of non-nitrogenous material. The other figures in the second column, indicate that the other rations averaged about 7¼ lbs. of carbo-hydrates, and the oxen showed by their keeping in good condition that this was enough. In (II), therefore, nearly two pounds of non-nitrogenous matters were not utilized, that is, they were wasted. We find, then, that about $^{9}/_{10}$ lb. of albuminoids and 7¼ lbs. of carbo-hydrates sufficed to keep the oxen in good condition.

Could anything be more convincing than this? The oxen are in good condition, and hold their own with their rations of straw, to which enough clover hay and rape-cakes are added, to make $^{9}/_{10}$ lb. of albuminoids, and 7¼ lbs. carbo-hydrates. When enough turnips are added to the straw to make 9.13 lbs. of carbo-hydrates, (II), or when 17.5 lbs. of clover hay, with 1.95 lbs. of albuminoids, (I), was used, they did no better. During the course of the experiments, they did, in fact, gain a very little in weight, but this gain was too slight to be of any account, and was more perceptible with the other rations than with I and II.—From the fact that this excess either of albuminoids or carbo-hydrates, was without effect upon the production, which in this case could, to be sure, be nothing but increase of live weight, we infer that for each 1,000 lbs. live weight, a ration containing $^{9}/_{10}$ lb. albuminoids and 7¼ lbs. of carbo-hydrates, was an economical one for the oxen at rest in the stall. The *cost* of rations (III–VI) containing the food ingredients in these proportions, averaged 7¾ cents. The clover hay, with its excess of albuminoids, cost 10¼ cents, or 40 per cent more, and that of straw and turnips, 9¾ cents, or 34 per cent more.

In the above calculation not the digestible but the total amount of albuminoids was taken into account. The ratio of actually digested albuminoids to carbo-hydrates, would probably be about 1 to 12.—This is only one of many series of experiments of this kind, that have been made at Weende and elsewhere, all of which agree in indicating that in food for oxen at rest in the stall, there should be about 1 lb. of digestible albuminoids to every 12 lbs. of digestible carbo-hydrates. And when the ratio varies widely from this, there is waste.

More about Nitrogen Ratios and Economy in Foddering.

The above experiments were made with animals from which no production was required, either in the form of work, or milk, or increase of weight in fattening. But other experiments show that oxen at work, milch cows, and fattening cattle, require food richer in nitrogen. Thus, for example, it is found that for milch cows, about 1 lb. of digestible albuminoids, to 5½ lbs. of digestible carbo-hydrates, is the economical ratio. And when the ratio varies widely from this, there is apt to be waste. This is illustrated by some experiments with milch cows, made by Dr. Kuehn, at the Station at Moeckern, in Saxony.

The custom of feeding cows on green clover was common about Moeckern. But clover is very rich, while straw is poor, in nitrogen. How would it do to mix the two?....Further, the question of *ad libitum* foddering, (that is, giving the animals all they will eat), was much discussed. Some said the cows themselves were the best judges of their wants. Others claimed they would eat more of such palatable food, as clover, than they would profitably utilize.—To test these questions, a feeding trial was made with four cows. During one period of several weeks, they received all the green clover they would eat. During another, a smaller ration was given, and a part of the clover was replaced by straw. The fodder and milk were carefully weighed and analyzed. Every precaution

was taken to insure accuracy. The rations in the two periods were as follows:

Table 14.	The Organic substance contained	
	Albuminoids.	Carbohydrates
	lbs.	lbs.
(I) 87 lbs. green clover and 6.7 lbs. barley straw	3.8	17.8
(II) 123 lbs. green clover	5.6	15.

The result was that the cows gave as much milk, and milk as rich in fat (butter) and casein with the smaller ration (I), of which a part was straw, as they did with the larger ration (II) of pure clover. The cost of the milk, as based upon the value of the fodder, was just about 50 per cent more with the clover alone, than with the mixture of clover and straw. The 3.8 lbs. of albuminoids was sufficient, and in the pure clover, with its 5.6 lbs., there was a waste. Part of this waste was due to the *ad libitum* foddering, but a part was due to the unnecessarily large amount of albuminoids in the green clover.

Now the bearing of all this on Mr. Harris' question is simple. To make of his straw a fit fodder for his sheep, he must not only add nitrogen, but he must add this in the right proportion. And it is clear that he will get this proportion with a smaller amount of beans or malt sprouts than of corn. Perhaps I may be able to give some tables of fodder mixtures for sheep.

Potato-Bug Notes.

Correspondence in regard to the Colorado Potato-Beetle is voluminous, and some of it rather amusing. We glean such matters as give information in addition to that in an article on page 304.

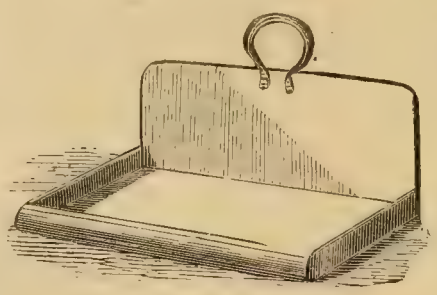
IS THE BUG POISONOUS?—There is sufficient evidence to show that under some circumstances it is, and that some caution should be observed. We have heard of no unpleasant results from merely handling them, but a case is reported to us in which the bugs being killed by squeezing between the thumb and finger produced swelling and other effects of poisoning. It is reported that a child was severely poisoned who mashed a large lot of bugs, one at a time, by means of two stones. Other cases have resulted from breathing the vapor from the bugs while scalding. The exhalation or vapor from the insects when bruised or heated, seems to be decidedly poisonous, and should be carefully avoided.

ANOTHER "ENEMY" TO THE POTATO.—A very intelligent correspondent in giving us an account of his experience with the Colorado beetle, informed us that he had found another enemy to the potato, more active, and consequently more mischievous than that. He sent us some specimens of his "new enemy" which we recognized as an old friend—the larva of one of the lady-bugs, which, with other insects, feeds upon the larva of the Colorado insect. It is a great comfort to know that as an insect increases in numbers, its natural enemies are likely to multiply, and in the western states there are a number of carniverous insects which prey upon the larva of the potato beetle. The Asparagus beetle, a few years ago, threatened to deprive us of Asparagus, but it is disappearing through the agency of other insects. It is well to remember that *all* insects are not injurious, and that in our warfare we should know our friends from our enemies. For fear that others may take a lady-bug larva for an enemy, we give an engraving which shows the general appearance of them. They are very active, and usually of a lead color, with a few orange-colored spots.

LADY-BUG LARVA.

CAUTION.—When the lady-bug larva is about to change into the perfect insect, it fastens itself to the potato vine, curls up, and appears as if dead. In this condition it may be mistaken by a careless observer for a sluggish larva of the potato-beetle of the same size, and picked off by mistake.

MECHANICAL MEANS are to be preferred to poison in destroying the bugs, unless they are so numerous through neglect that nothing short of Paris green can be of use. Hand-picking is slow, but sure, and if started in time and persevered in, will conquer them—but no half-way work will do. There have been several mechanical contrivances for catching the insects. A photograph of one was sent us from Pottsville, Pa., which is like a small hand-cart with an opening through the bottom; this is intended to straddle the rows, knock off the bugs, and catch them on tarred boards. As we have not seen it work, we can only describe it from the picture. In all such things the simplest is the best, and a very simple affair is shown in the engraving; it consists of a large tin or sheet-iron dust-pan, with a back to it, and the edge rolled inwards to prevent the insects when once in, from crawling out. It is 30 inches long, the other parts being in proportion. The operator takes it in one hand and a short broom or some kind of brush in the other, and passing along the rows, knocks or sweeps the beetles and the larvæ into it. Not having bugs enough of our own to give it a fair trial, it was taken to the field of a neighbor, where it worked admirably. The affair was left at our office by the tinsmith who made it, but who



PAN FOR CATCHING POTATO-BUGS.

did not leave his name.....Still simpler is the plan of D. O. Crum, Portage Co., O., who makes a paddle of a shingle, which he takes in one hand, and in the other a large tin pan, like a dish-pan, and by the use of the paddle knocks the bugs from the vines into the pan, and then kills them. He says that he does not think there is two pounds of Paris green used in the county. But the insects are never so bad after the first year or two.

THE USE OF PARIS GREEN.—Many prefer to apply the Paris green dry, mixed with flour, as it adheres better than when stirred with water, (see page 226, June last). Mr. L. B. Goodwin, Rock Island, Ill., sends us a method which we have not seen published. He makes flour paste as for putting on wall-paper; one pint of this is added to a pailful of water, and then a tablespoonful of the green is put in and all mixed very thoroughly. The vines are sprinkled with this mixture in any convenient way; our correspondent uses a wisp of straw or an old brush, and sprinkles his vines. This strikes us as a very sensible suggestion, as the paste in the first place prevents the poison from settling so rapidly as it would in clear water, and it sticks the poison to the plant, preventing it from being blown away. Thanks, Mr. G.

WILL THE TUBERS BE POISONED?—This question comes up very often from eastern correspondents. In the western states where Paris green has been used so long, they do not need to ask. So far as negative evidence can go, we say most decidedly *no*. It is true that we use a most deadly poison, and the fact that it is dangerous and deadly, should always be kept in mind, but we also know that plants are very sensitive to the action of poisons, and should any virulent poison come in contact with its roots, the potato plant would be killed. The fact that the plant remains perfectly healthy, shows that it does not take up the poison; it could not take up enough for the poison to be manifest in the tubers without being itself killed in the attempt. The amount applied to the square foot is so very small that no danger need be apprehended. A city near New York is said to be considering a law to prevent the sale of potatoes raised by farmers who use Paris green. The effect of this foolish law would be to encourage lying, and shut out farmers honest enough to admit that they did use it. Besides, in this very place potatoes have been sold for several years past, which came from western localities, where the green is used, and no one has been injured.

WILL NOTHING ELSE KILL THEM?—We are frequently asked if nothing but Paris green will kill the potato-beetle. Undoubtedly any other equally virulent poison will destroy them, but for ten years intelligent cultivators from Kansas and Missouri eastward, have been experimenting, and have found that no less mild remedy is of any use, and have fixed upon Paris green, as of all the poisons the most effective as well as the most manageable, and at the same time the cheapest. We know what Paris green is—its danger, and all about it—while its color is likely to prevent any accidental use of it. We do not countenance the use of any secret remedies for the reason that they can be no better than Paris green, and their composition not being known, accidents may occur. One of these, which we know to be arsenic in some form, is a white powder, and for that very reason all the more dangerous to have about. We will not advertise such things, and will not in any manner countenance the use of any secret application to plant, insect, beast, or to man, so we say let all secret preparations alone. Do not use any poison until it is manifest that hand picking and other mechanical means are of no avail, then use Paris green with the full knowledge that it is one of the most dangerous of all poisons.

Oleo-Margarine Cheese and Butter.

It is about two years since the preparation of tallow, known as oleo-margarine, was brought to the public notice, and offered for sale as butter. Then the *American Agriculturist* took strong grounds against it as a fraud upon the consumers of butter, and a dangerous thing for dairymen to touch, and advised dairymen, produce dealers, and consumers to avoid it. Since then this stuff has been largely used to mingle with skim-milk for the manufacture of cheese, and some dairymen have unfortunately been led into the most surprising advocacy of this adulturation by officers of the Dairymen's Association and a University Professor, to enter into the manufacture of this fraudulent article. As pointed out two years ago, and often since, the public refuse to eat this trash; the markets are consequently overstocked with it, and prices for genuine cheese are borne down by the pressure of the unsalable adulterated article. The wholesale produce dealers are now very bitter against the "oleo-margarine," and many manufacturers doubtless feel equally bitter against those who induced them to make the unsalable cheese. The verdict of the public, however, will be, "served them right," for those who undertake to adulterate food, and those who encourage the attempts to do it, are both deserving of censure, which the public will not be slow to inflict upon the delinquents. In self-defence those factorymen, who make genuine butter or "full cream" cheese, should take means to prevent this unfair and injurious competition, by procuring the passage of a law to prevent the sale of adulterated cheese or butter, except it be conspicuously branded, and represented openly as what it really is, a mixture of milk with beef-tallow, cotton-seed oil, horse-fat, or whatever other ingredient may be used in the adulteration.

A Plowing-Match at Mineola.

After long continued efforts made by Mr. Crozier, of Beacon Farm, a plowing-match association has been formed, and the handsome sum of $250 raised with which to offer attractive prizes. Mr. Crozier, as is well known, is an enthusiast in regard to plowing, and spares no expense to procure the best implements. If he can infuse a like spirit into his brother farmers, much good would undoubtedly result. The match came off at Mineola, L. I., in connection with the Queens Co. summer exhibition, on June 24th and 25th. A number of plows were entered, and some excellent work was done. The first prize, a silver cup, value $100, was carried off by Charles McKay, one of the Beacon Farm plowmen, with a Scotch lap-furrow plow, made by Thompson, of Scotland. Edward Small, of Long Island, gained the first prize, a silver cup, value $50, for flat-furrow plowing; the plow used was a Collins No. 3 steel plow. The Ames Plow Co. took the prize for swivel plows, and sod and subsoil plows. In double-furrow plowing the premium was gained by George Aiken, from the Beacon Farm, with one of Gray & Co.'s (of Glasgow, Scotland,) double furrow iron plows. The Deere Gang-plow was highly commended, and did excellent work. In stubble-plowing John Small, with the Collins plow, took the prize; John Collins, who competed with him with a Deere G. P. No. 5 plow, lost the prize by only one badly turned furrow, made by the swerving of the team at the finish. It is greatly to be hoped that plowing-matches, now so rare, may become general, and lead to a great improvement in the ordinary style of plowing.

Ogden Farm Papers.—No. 66

BY GEORGE E. WARING, JR.,

Recent investigations into the state of the art of house-drainage and sewerage, have brought to my notice an English invention that seems to be of great value. It is shown in figure 1, and is called a "self-acting flush-tank," (the invention of Mr. Rogers Field, of London). It is intended for use at the outlet of a house-drain, and wherever possible, is best placed close to the waste-pipe of the sink, outside of the house, where it will answer as a grease trap, and prevent the choking of the drain beyond by the congealing of fatty matters. For this purpose the whole apparatus is made of earthenware, consisting mainly of four pieces—*A*, the reservoir; *B*, the grating or screen, and a trap for preventing the escape of foul smells; *D*, a siphon, and *F*, the beginning of the outlet—so arranged that the siphon will be readily brought into action, when the tank is filled, by the addition of a small quantity of water. An important acces-

sory is the pipe, *C*, which is a ventilator, carrying the foul gases to the top of the house, by connecting with the main water conductors. In use, all of the water reaching this apparatus, after being screened of its coarser materials, by the grating, *B*, flows through the trap into the reservoir *A*, where it rises until this is entirely full, and where its heavier parts settle to the bottom, and its grease becomes cold and floats at the surface. When the

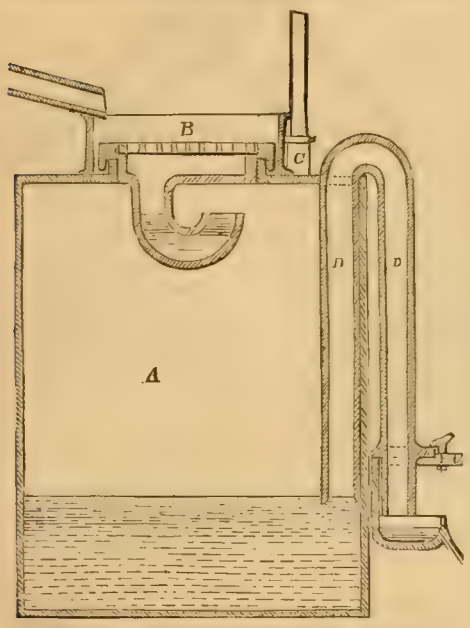


Fig. 1.—FIELD'S SELF-ACTING FLUSH TANK.

reservoir is quite full, the pouring in of a single pitcher of water, sets the siphon in operation, and it continues to flow, full bore, until the contents of the reservoir are lowered to the level below which heavy matters are allowed to accumulate—the cover *B*, being occasionally removed to scoop them out. The drain leading from the outlet, *F*, may be connected with an under-ground drain, sufficiently deep to allow the whole apparatus to be buried out of the reach of frost, the grating, *B*, being a foot or

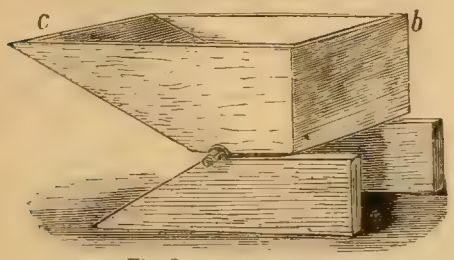


Fig. 2.—TILTING BOX.

so under ground, in a recess having a movable cover. The outlet may be brought to the surface, or into connection with irrigating pipes near the surface, at such distance from the house as the inclination of the land will allow.

The great annoyance in connection with the drainage from small establishments, and notably from a kitchen sink, arises from the fact that the stream is usually only a small trickling one, which has no power to carry away impurities, and wash out the drain, and which sinks into the soil at the first open joint, slowly fouling a considerable area, and constituting a source of real danger in hot weather. This effect is also much aggravated by the congealing of hot grease, which will sooner or later accumulate sufficiently to choke a pipe of any size. With the use of the flush-tank, as there is ordinarily no flow of water at all through the pipe, any fouling of the ground from the liquid has time to become perfectly dry and aërated, and during the periodic flow the whole mass is carried forward in a cleansing stream, to any point of discharge that may be selected. This apparatus is not now to be obtained in this country, but a supply would soon be produced did a sufficient demand exist for it. The cost of importation of single specimens between $25 and $30 is altogether too high for ordinary use.

The importance of any complete device that will lead to the reform so much needed in the arrangement of house-drains throughout the country, especially in the case of farm-houses and country residences, is so great that this of itself makes it eminently necessary to describe this method in these papers; but the principle upon which this apparatus is based, has another and more purely agricultural application, which I especially desire to bring into notice; and I can, perhaps, best accomplish my purpose by describing the conditions existing at Ogden Farm, and the manner by which it is proposed to overcome them with the help of a similar device.

Our barn cellar, which is the manure cellar, 40 feet by 100 feet, is dug into a heavy clay soil, having some porous strata, which bring water to it in every heavy rain. The consequence is, that, in order to keep it even tolerably dry, we have had to lay a deep underdrain delivering on to the land some distance away; and here, for a short distance, the small outflow over-saturates the ground, producing an enormous growth of rank grass, of little value, and constituting, practically, a waste of some of the very best of our manure. Could this intermittent flow be stopped, and the whole volume discharged rapidly, with force enough to carry it over several acres of land, by means of surface irrigating gutters, we should get a great advantage in place of what in now a real disadvantage. The plan that I propose is this: To wall up a cistern in a corner of the cellar, about 10 feet square, and 7 feet deep, carrying a 4-inch siphon pipe from a point within a foot of the bottom of this, over the partition wall, delivering by a cemented connection, into the present underdrain, which is large and good. I shall place a small windmill on the barn, to work a pump in a depression in the cellar, to which all liquid will flow, pumping all of this liquid manure into the new cistern. Then, whenever this is full, the siphon will be set in operation, and it will flow steadily and copiously until emptied. As the amount of water delivered by the pump, would be at no time great enough to fill the siphon and start its working, I shall adopt the plan shown in the accompanying illustration (figure 2) for delivering the liquid to the tank in large quantities, and at intervals. Whenever the tilting box is filled, it will discharge its contents at once. I am confident that this plan for getting rid of the cellar water, will relieve us perfectly of a difficulty that has seemed insurmountable until the account of the flush-tank suggested a means for overcoming it. This arrangement will not only enable us to keep the cellar dry, and to make profitable use of the cellar water that is now troubling us, but we shall be able to extend this manner of using our manure up to the full requirments of the land we are thus enabled to irrigate; for we have already a copious supply of water from another windmill, which we can at any time turn into the cellar, and so increase the amount of the liquid available for irrigating use. Of course this particular arrangement will be unsuited to many other cases where a corresponding difficulty is felt, but I am confident that the siphon tank offers a suggestion which may be very wide and general in its application.

I described, last year, the drainage of a swamp in Massachusetts, by a long and deeply laid 6-inch drain, having a bell or funnel-shaped mouth, for the admission of the water at the upper end. The work was completed late in the summer, and the whole apparatus worked perfectly. I had been assured by an engineer in the neighborhood, that nothing less than an eighteen-inch pipe could carry the water of so large a district subject to frequent heavy rains; but with the heaviest rain fall that has been known for years, the capacity of the pipe has been quite ample for its work; in fact, the water flowing from the mouth of this six-inch pipe, after the storm, made an angry looking brook three feet wide, and more than a foot deep. It seemed impossible to believe that such a volume of water could have proceeded from so small a channel; but the velocity in the pipe was exceedingly great, and the flow became retarded by the rough sides and bottom of the channel into which it was discharged, the decreased velocity of course enlarging the size of the stream. Another difficulty, however, which was anticipated at the outset, has shown itself to be formidable. The swamp is a circular one, surrounded by high land, and has evidently been at some time a deep lake. We were able to procure no pole of practicable size, with which we could reach the bottom, and an area of several acres trembled at a heavy tread, so as to ripple the water in the ditches throughout the whole extent. In fact, the soil of the swamp consisted of only partly decomposed roots and flags, in the condition of a sponge, distended by saturation with the water, and as fast as the water was withdrawn, the sponge dried and contracted, and although we lowered the water in the ditches four feet, the surface of the ground has settled to very nearly its present level, so that a large part of the swamp is just as badly off as ever. The drain was made as low as practicable without inordinate expense, and while it suffices perfectly for the removal of all the hill water flowing into the ditch, (which entirely surrounds the swamp), we have to adopt some further means for draining the swamp itself.

Remembering my observations of drainage works in Holland, (similar, though on an enormously larger scale), I have concluded to make what the Dutch call a "polder," of this swamp; throwing up a low dyke at the inner bank of the encircling ditch, so that under no circumstances can spring floods break in upon it, and to provide a sufficiently deep outlet for the enclosed area, by artificial pumping. The area of the swamp, inside of the ditch, is about six acres, and I shall provide for giving this an outlet, if necessary, at a depth of fifteen feet below its present level, digging a well near its present outlet, with a pump having the capacity of a two-inch pipe, and arranging to admit the main ditch of the swamp at lower and lower levels, as it becomes necessary to deepen it. With the arrangements already made, the cost of providing this outlet, pump, windmill and well, will not exceed $250, and the land, when once laid dry, ought to make meadow land of the first quality, worth, in that neighborhood, $250 per acre. I state the case and describe the process at this early day, because the season is close upon us, when others, having similar work to perform, should set about it, and I have seen enough of such operations abroad, to make me confident in recommending this method. It will probably take a year or two for the land to settle and become firm, but I shall report progress.

A correspondent in Pennsylvania writes: "I wish to know how many acres of rye it will take to keep twelve cows, with the help of twelve acres of good pasture, until sowed corn is fit to cut, putting in the corn as early as possible; and how much corn will it take to keep them until cold weather comes on? What time this fall should I sow the rye?"

Rye will not go very far toward carrying cattle through from the first green of the spring, until corn-fodder is ready to cut, for the reason that it grows so rapidly, and becomes so soon hard and unpalatable. However, as in this case there is a fair amount of good pasture, the rye will only be needed as an accessory. Two or three acres will be enough, if the land is even tolerably good. The seed should be sown about the 10th of September. Then, with a fair growing season, the rye will afford a good nibble in November, and if it is well set, it will bear pretty thorough feeding off, (in dry weather), even after heavy frosts have checked it. It should not be pastured in the spring, unless it is to be kept for pasture altogether, but it should be used for soiling, the mowing being begun when the blades have reached the length of 8 or 10 inches. Its growth at this time is very rapid, and all that is cut off before the flowering shoots appear, will make nearly as full a crop as that which has been left undisturbed. If a larger area is sown—say five or six acres—it may be pastured pretty steadily up to the 1st of July, but this is a wasteful system as compared with the use by soiling. In either case a small field of rye would be a great help to the pasture, and there should be no difficulty, by the system proposed, in carrying the stock through in good condition to corn-fodder time. Three acres of corn-fodder will be ample for 12 cows.

I have a letter from Mr. S. R. Gridley, of Bristol, Conn., who is one of the oldest breeders of Jersey cattle in the country, and who comes to my aid in the attempt to dissuade breeders from deferring to a very modern, and, it seems to me, a very absurd fashion, that sprung up a short time ago, in favor of solid (or uniform) color. Mr. Gridley says: "I will say that, twenty years ago, when I first commenced breeding this kind of stock, they were nearly all fawn and white. Mr. Buck had some black and white, Mr. Taintor's were fawn and white, (what he called 'patchy'), and Mr. Norton's were French-gray and white. L. C. Ives and Geo. Beach had each a fawn and white cow, *white enough to condemn them at the present time with the modern breeders*; still the former made 17¼, and the latter 17¾ lbs. of butter per week. Then a solid-colored Jersey was looked upon with suspicion. Even as late as 1860 I bought one of Daniel Buck; she was dark-fawn, with black points, (a gentleman from eastern Connecticut, who said that he had visited the Island of Jersey, denounced this solid-colored cow as an impure Jersey), the first that I ever heard of the full black-point merit, I was informed that it was the 'peculiar taste' of Mr. J. P. Swain, and I have no disposition to deprive him of his taste. Still the best Jersey cows I have ever seen, were *not* all of one color. It is true, I have two or three solid-colored cows, and ask more for them, as they are *fashionable* colors."

Mr. Swain can not be accused of originating this notion, which I believe to have been entirely a creature of the Messrs. Fowler, the principal English dealers in Jersey cattle. Their purpose in resorting to the dodge is, I think, sufficiently clear; and Mr. Swain, I fancy, adopted it from its supposed bearing on one of his favorite theories concerning the buffalo origin of this race of cattle. It seems to me that the best presentation of the case has been made by a correspondent of the Country Gentleman, who compares the black tongue and black switch mania, to the wag's suggestion that Horace Greeley, in "What I Know About Farming," said that the best broom-corn seed to plant, was that which had a black stripe around the handle. Logically viewed, I think the two cases are fairly parallel.

What is Asbestos?

It frequently happens that a substance which has only been known in the laboratories and in the cabinets of scientific collectors, is put to some new use, and at once becomes an article of general interest. This is the case with asbestos, of which specimens were regarded as remarkable mineral curiosities, but the applications of which were very limited until a few years ago, when its incombustible and non-conducting qualities were turned to account in various ways by Mr. H. W. Johns, who has set the word before the public so prominently, that there is a general desire to know something about the material. It has already been hinted that asbestos is a mineral, and one not very familiar with minerals, would be surprised to find in a well arranged collection, that some black glassy-looking crystals with well marked angles, labelled hornblende, occupy a place very near some pure white specimens, with a fibrous appearance, and a satiny lustre, which do not look like a mineral at all—asbestos; if the collection is at all full, there will be fibrous masses like figure 1, of yellowish-white, and though soft and flexible, have no luster, and specimens like fig. 2, in which the fibres are distinctly seen, but are compacted closely together.

Fig. 1.—FILAMENTS OF ASBESTOS.

Much of what is called asbestos, is a variety of the very common mineral *hornblende*, which in its most perfect form, exists as handsome black crystals. These minerals, hornblende and asbestos, so unlike in appearance, are placed near together on account of their similar chemical composition, which is mainly silica, magnesia, and lime, with a small amount of iron in some. Asbestos gets its name from Greek words, meaning unchanged by fire, as it is not affected by any ordinary heat. The common acids do not attack it, hence it is of use in the chemist's laboratory for various purposes, such as filtering acids. The non-combustible properties were known to the ancients, who made a cloth from it in which the dead were wrapped preparatory to burning, and in which the ashes of the body were saved; they also employed it for lamp-wicking. Among the minor uses to which asbestos has been put, is that of making gloves for the use of those who have to handle hot iron. The finer kinds, which are pure white and silky, are comparatively rare and expensive, while the colored and more compact forms are quite abundant, and are found in various parts of the country. Some of the largest deposits being controlled by Mr. Johns, who, at his factory, reduces it to various degrees

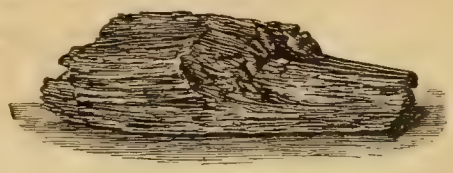


Fig. 2.—SOLID ASBESTOS.

of fineness, according to the uses to which it is to be put. The largest quantity is consumed in preparing roofing material, for which the material is reduced to a kind of flock, and forms the basis of a compound which is applied to a strong canvas. This is nailed upon the roof, and afterwards painted over with Asbestos Roof-Coating, which consists largely of the mineral. Various non-conducting articles, such as felt, board, cement, etc., for protecting wood-work which is exposed to fire, are made largely of asbestos, and are also used to cover boilers and steam-pipes to prevent the loss of heat. The material has also been employed in making fire-proof safes. One of the most recent applications of asbestos is in the making of steam-packing, to use around the piston-rods and other moving parts of an engine, where a steam-tight joint is needed; for this purpose it is spun into ropes of different sizes. Indeed so many uses have been found for what was not long ago a nearly worthless substance, that we shall by and by wonder how the world managed to get along without asbestos.

Extension Ladders.

BY L. D. SNOOK, YATES CO., N. Y.

Extension ladders are useful for various purposes, especially about a farm, yet not one farmer in ten has an extension, or even a common ladder of sufficient length to reach the roof of his buildings in case of fire or any accident requiring their use. A ladder of 25 feet or more in length is a cumbrous affair for common use, while one of 14 feet and one of 16 feet may be easily handled, and are the most desirable lengths for general use, and two ladders of the above lengths are easily converted into extension ladders at will. The side-pieces of ladders should be straight grained, and free from knots or any decay. A pole of chestnut or pine of suitable size, when split or sawed, is preferable to sawed pieces obtained at the mill. Connecting rounds or rungs should not be less than 1¼ inch in diameter at the ends, enlarging as they approach the center, and made of the best and toughest seasoned wood to be obtained. In fig. 1 the top rounds of each ladder serve as a hinge, and the figure shows the ladder partly folded; when opened, the ends of one, *H*, *H*, rest against the round, *E*, of the other; small rivets or bolts should pass through the ends near *H*, *H*, to keep it from

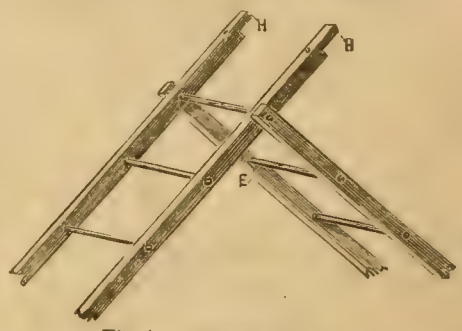


Fig. 1.—EXTENSION LADDER.

splitting. Fig. 2 shows a more desirable plan, in which *A* is an iron band or clasp that is placed upon the side-piece, *X*, and when the ladder is extended, slips down over the end of side-piece, *S*, as far as the round *M*. Both sides being thus made, the ladder can be turned over without becoming disengaged. Both ladders, when partly folded, make a good, serviceable step-ladder for picking fruit, etc. In making the one shown in fig. 3, place the rounds an equal distance apart, say 14 inches, then exactly two inches below each round, bore a half-inch hole in the opposite direction, as shown at *P*, *P*, *P*, *P*, so that when the end of one ladder is lapped over the other, the holes will be directly opposite; you can then make them of the desired length, by uniting them with four one-half inch bolts, *B*, *B*, *B*, *B*, furnished with easy turning or winged nuts. The coupling of this ladder takes a few minutes' time, but it is perfectly safe when

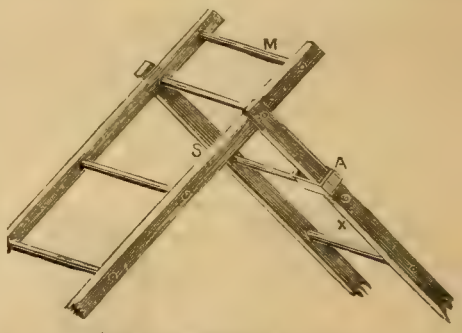


Fig. 2.—EXTENSION LADDER.

properly united. The upper, lower, and middle rounds of long ladders should be one inch thick, and two-and-a-half or three inches wide, projecting and keyed at the ends, as shown at *T*, which prevents spreading apart. Ladders should be painted and kept under shelter when not in use. Farmers should also have more stationary ladders about their buildings, especially the barns, giving easy

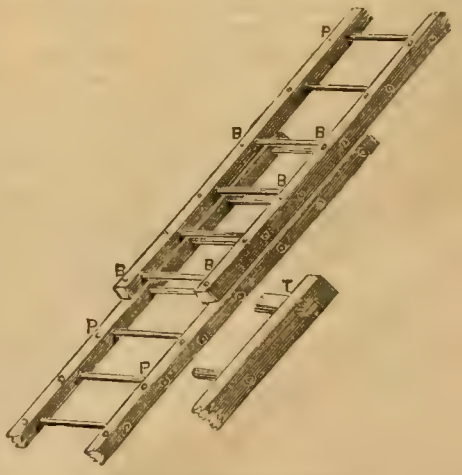
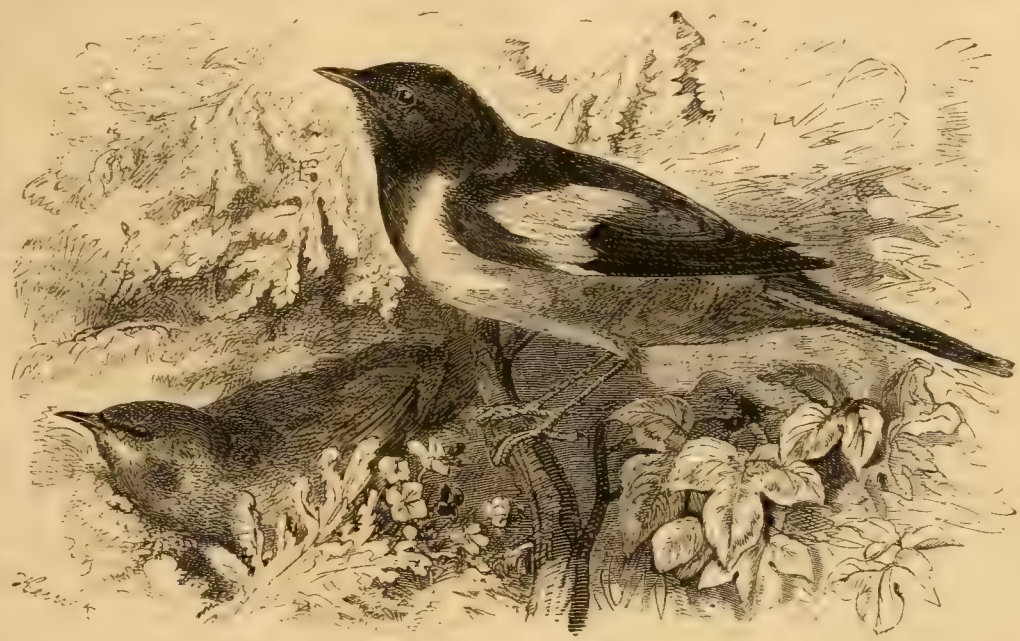


Fig. 3.—EXTENSION LADDER.

access to the most frequented parts of the loft, without incurring danger to life and limb.

The Esquimaux Dog.

In all arctic countries the dog is a most valuable domestic animal, as it is the only one that can be used for transportation; in those regions, where there is almost no vegetation, only carnivorous animals can be kept, and the dog is the only one of these that has been domesticated and trained to work. It is a notable fact that the dogs of savage and partly civilized peoples, show a very strong resemblance to the wolves of those countries, and so nearly related are the Esquimaux dogs to the Canada wolf, that it is difficult to find any certain marks of distinction between them. A pure white Esquimaux dog, recently imported, attracted considerable attention at one of the English dog shows, a few months ago, and had its portrait, which is here reproduced, published in "The Country," as the finest specimen of its kind that had been seen in England. These dogs are usually brindled, and a pure white one is regarded as of especial value. The following are the measurements of this remarkably fine specimen: Hight at shoulder, 2 ft. 6 in.; length from center between shoulder blades to center between ears, 1 foot; from latter point to end of nose, 11 in.; length from shoulders to setting on of tail, 2 ft. 7 in.; length of tail, 1 foot 4 in.; measurement round head just behind ears, 2 ft.; just above eyes, 1 foot 8 in.; at point of nose, 10 in.; his girth measured fairly tight, not outside the hair, 3 ft.; his weight is 120 lbs. Like other Esquimaux dogs, this one does not bark, but when angry or hungry, gives a howl precisely like that of the wolf. This animal is very tame, following its master, and showing no signs of its wild nature, which may be due to the fact that it is well fed. Among the Esquimaux the dogs are scantily fed, and receive no other caresses than those given by the end of a six-foot seal-skin lash; but notwithstanding they are hard worked, and brutally treated, they are much attached to their masters. The chief distinctions between these dogs and the wolf, are that the wolf has a more oblique eye than the dog, and that it carries both head and tail down in running, while the dog runs with head up, and the tail curled over the back; yet Dr. Kane states that he has had in his teams, dogs which had all these wolfish characteristics, and that he has more than once mistaken a pack of wolves for the dogs of a party of Esquimaux.



THE AMERICAN REDSTART.—(*Setophaga ruticilla.*)

THE ESQUIMAUX OR WOLF DOG.

That the Esquimaux dog is very closely related to the wolf, is shown by the fact that they will breed with wolves, and it is said that the Indians cross their dogs with the wolf, to improve the breed and increase their courage. These dogs are not only used to drag the sled, but on journeys during the short summers they serve as pack animals, and carry a load of 25 or 30 lbs. fastened across their shoulders.

The American Redstart.

One of the handsomest of our smaller birds is the Redstart, which begins to arrive in the northern states about the first of May, and commences to build its nest about the first week in June. The nest is generally placed on a small tree, about eight or ten feet from the ground, and is composed of fine strips of cedar bark, wild grape-vine bark, grasses, and the like, and is altogether a neat affair, with its interior constructed with considerable skill, and its exterior disguised by lichens and other materials, glued on with the saliva of the birds. It is hollowed deeply and lined with threads of grape-vine bark, hair, etc. Four eggs are usually laid, of a beautiful cream-white, marked with reddish-brown and pale-lilac spots. The birds frequent woods, orchards, and pastures, and their beautiful colors and vivacious movements enliven every spot where they abound. Their note is a shrill cry of *chee-we-ea*, uttered at frequent intervals. They dart about like the fly-catchers, and seize insects while on the wing, snapping them up with a noise like that of shutting a small pair of scissors; they also work industriously among the foliage of the trees and shrubs, and destroy many insects. The Redstart has received several systematic names, but the one accepted by our ornithologists, is *Setophaga ruticilla.* The bird is about five and a third inches in length. The male has its head and neck black, with bluish reflections; the sides of the breast, lower wing coverts, and tail feathers, except the two middle ones, of a beautiful orange-red; the abdomen and lower tail coverts, white; bill brownish-black. The female is different in color, for where the male has orange-red, her color is yellow, besides she is brownish-olive above, and whitish-yellow beneath. This bird stays in the eastern states through the summer, and about the middle of September begins its southern migration, at the end of which month it may be looked for in vain. The beauty of the plumage of the Redstart, and the havoc it makes among insects and their larvæ, should entitle it to protection.

Traveling Thrashing Machines.—It is a question worthy of consideration, if it is not more economical, as well as more convenient, for a farmer to own his horse-power and thrashing machine, than to hire one of the large machines which go from place to place to work. The cost of thrashing by one of these, is perhaps equal to one-tenth of the crop. It is attended by considerable extra expense in providing extra hands, or extra teams, and there is some waste in doing the work in a hurry. The labor is excessive while it lasts, and there is, moreover, the cost of boarding hands and horses. For a crop of 1,000 bushels of grain, the cost will amount to over $150. With a two-horse-power machine, costing $275 to $350, this work can be done in five days, without hurry, inconvenience, or loss, and often without extra help. The horse-power will also serve other purposes, which will thus reduce the cost attached to the thrashing. Upon farms that have 500 or more bushels of grain

to thrash each year, it would certainly seem better to have a machine of one's own, than to hire a traveling machine.

Walks and Talks on the Farm.—No. 140.

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I noticed a fact this spring that might be quoted to sustain the views of Prof. Atwater. One of the worst pests on my farm is Red-root or Pigeon-weed. The seed germinates in the fall on the winter wheat. It goes to seed next summer before the wheat is cut. The seed falls to the ground and germinates in the fall, and the plants grow among the clover and go to seed in June before the clover is cut for hay. Whatever plans we adopt for checking its growth in the winter wheat will fail to clear the farm of this weed, until we can destroy it also in the clover. A heavy crop of clover, of course, has a tendency to smother the red-root, but there is more of it in the hay than most of us suspect. If the clover is light, as mine was this year, the red-root shows itself in full force. I once asked John Johnston if sheep would not eat it? He replied in substance, that possibly they might be starved to eat it. He once had a neighbor who undertook to clean his foul farm by keeping a large flock of sheep and compelling them from sheer hunger to eat the weeds. He partially succeeded in his object, but he killed a good many sheep also, and so weakened the others that his flock was almost worthless. He advised me not to try the experiment.

I have a flock of pure-bred Cotswolds, kept for breeding purposes, and I feed the ewes and lambs liberally. This spring I hit on a new method of feeding them which works to a charm. I feed no grain or oil-cake, my object being, not to get the ewes fat, but to secure a large flow of milk for the lambs. Formerly I fed bran for this purpose, together with mangels and clover hay. This spring I fed *malt-combs* instead of bran. At first I fed it dry, but it occurred to me that when we want cows to give a large flow of milk we "slop them." And I thought I would try slopping my ewes and lambs. We were cooking malt-combs for the pigs, and I told the shepherd to put some troughs and half-barrels in the sheep-yard, and carry them a pail or two of these warm slops, and see if they would eat them. At first the ewes did not know what to make of them, and only drank a very little. But the next day they drank more, and more the day following, and the next day more still. "Give them all they like to drink," I had said, "it will not hurt them."—And it did not. But it seemed impossible to give them all they wanted. We carried over 100 pails a day to a flock of sixty ewes. This was more work than I had bargained for, and so I gave up the idea of cooking, and adopted a new plan. I put a large linseed-oil barrel, holding about 150 gallons, in the sheep-yard near the pump. Into this we put a bag, (50 lbs.), of malt-combs, and filled up the barrel with water, and stirred up the malt-combs, and let them soak twelve hours. Then we filled up the troughs with the slops, and let the sheep drink all they would. This was but little more labor than if we had given the sheep nothing but water. But it was a vast improvement over the ordinary manner of feeding dry food and clear water.

We continued to let the sheep have all they would eat or drink of these malt-combs, even after they were turned to grass—allowing them at the same time some dry malt-combs in the troughs. And now comes the point of my story. There was considerable red-root in my clover pasture, just in blossom, and it worried me a good deal to know how to prevent it from going to seed. That question was soon settled. *The sheep nipped off every green head and branch of the red-root.*

I think Prof. Atwater would explain this result as follows: Malt-combs are rich in albuminoids, and it has been shown that when sheep are furnished with the necessary amount of nitrogenous food, that they can then digest cellulose or woody fiber. If you feed a sheep on straw alone, it will not digest as much of the straw as if it had grain in addition. And so with this red-root or pigeon-weed; ordinarily the sheep will not touch it. It is undoubtedly a poor food. But when you give the sheep rich concentrated food, they will then eat more or less of this poor innutritious food.

It so happens that the sheep are having rich nitrogenous food, but I am by no means sure that they would not eat the red-root if they had corn instead of malt-combs. It is not the nitrogen they need, for dry young clover contains more nitrogen than dry corn, and yet they will not eat the weeds if they have nothing but clover. What seems to be needed is richer and more concentrated food, and it will probably make very little difference whether this rich concentrated food is what we call a highly nitrogenous food like peas, beans, oil-cake, or malt-combs, or whether it is a rich carbonaceous food, so-called, like corn.

The important fact, (and I thank Prof. Atwater for bringing it out so clearly), is this: If you want animals to eat poor food, do not starve them to it, but give them sufficient rich food to enable them to digest the cellulose or woody fiber. *It is a lesson which thousands of farmers need to learn.*

The drouth still continues. We shall have light crops in this section. Winter wheat on many fields will not return more than the seed. Barley and oats will be far below an average yield. It is too soon (June 15) to say anything about corn, but the indications are favorable. I hope we shall have a great crop. The country needs it, and I suppose an unusually large area has been planted. The scarcity of pigs will give us good prices for choice pork, and the "hog crop" next fall will prove a profitable one. And this is the real point. Business men and financiers talk about the money which we get for wheat, corn, etc., but what the country needs is more *profitable* agriculture. We need better crops per acre and better prices. I predicted the present depression in business, I knew that farmers were not making money. I knew they were selling nearly all their products at less than it cost to produce them. *It is not the aggregate amount of money we receive for our products that determines our prosperity, but the margin of profit left after deducting our expenses.* Our expenses have been far too great, and we have been obliged to curtail them—hence the depression in business. What the country needs to-day is better farming. I think we shall have a higher range of prices, but that alone will not insure prosperity. We must have larger crops per acre. This will lessen the cost of production. We must have better stock and feed more liberally.

"But will it pay?" again asks the Squire. "I got a Cotswold ram from you and bred him to a lot of long-wooled ewes that I got in Canada, and I am sure I could have done better with common sheep."—"There is no doubt on this point," I replied, "but you overlooked the essential point in regard to 'feeding liberally.' You half starved them. The poor things have had barely enough food to sustain the vital functions, and nothing to grow with."

John Pierce, a successful fine-wool sheep breeder, was here to-day (June 15), and we put three of our lambs on the scales. The first one we caught was a ewe lamb, born March 19. She weighed 75 lbs. The next was a ram lamb, born March 13. He weighed 85½ lbs. May 11, the latter weighed 59 lbs., and has gained 26½ lbs. in one month and four days. These are thorough-breds. We then caught an average grade Cotswold-Merino ewe, two years old, with a lamb by her side. She weighed 148 lbs., and the lamb, born March 17, 65 lbs. This lamb, on May 11, weighed 46 lbs., and has gained in one month and four days, 19 lbs. This ewe and her lamb is a fair representation of what we may expect from this cross when the ewes and lambs are fed liberally. I could select heavier grade sheep and heavier grade lambs. Now I will not stop to answer the Squire's question, "will it pay."—We do not get anything like as much for good mutton as it is worth, when compared with poor mutton, but even as things are now, I can figure out a very respectable profit from this system of breeding and feeding.

"C. S.," Pittsburgh, Ind., writes: "I sold to-day eighteen hogs, just ten months old, that averaged 286 lbs., after driving six miles. They were of Magie-Poland China-Berkshire-No Breed of this section, and considered something extra by my neighbors, but they were rather coarse, and not uniformly good feeders. Could not the same weight be made on well-bred pigs, in the same or less time, with less expense?"—Mr. S. has purchased a thoroughbred Essex boar, which he proposes to use on his large sows. This cross will certainly improve the quality of the pork, and I think, give him a greater weight in proportion to the food consumed. The above hogs were fed "bran and ship-stuff; on clover pasture in the fall, corn in the winter, and clover pasture in the spring."—This is good management, and the pigs must have been a good lot. But there is no necessity for keeping the "large breeds" to get pigs of 300 lbs. live weight.

So far as I have observed, the quality of western hogs is rapidly improving. And this is the great point for us to aim at. We want better pork and better prices. We ought to produce the best pork, bacon, hams, and lard in the world. I do not like to see the following quotation in the English papers every week: "Bacon.—Market very firm, Irish fully maintains late rates. Waterford singed, sizable sides, 84*s*. per cwt.; Limerick, 76*s*. to 80*s*. Hambro bacon has risen in value, and is now quoted at 70*s*. to 74*s*. per cwt.; American sides, 62*s*. to 63*s*. per cwt.; scalded short middles, 54*s*."

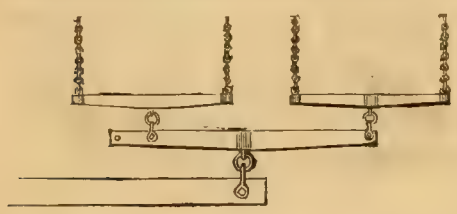
All we need to add from 3 to 5 cents per pound to the price of our own hams, and bacon, and pork, is a little more attention to *quality*.

I do not think I have ever known farmers feel so "blue" as at the present time. And in truth it is not to be wondered at. The times, and seasons, and crops are discouraging. But let us not be cast down. Let us keep on working and hoping. There is light ahead. We have less to complain of than any other class. The duty of every farmer who can afford it, is to push forward improvements. Labor and materials are comparatively cheap, and it is a good time to spend money—if you do it judiciously.

We have a German farmer in this neighborhood, who sets us all a good example. He commenced life as a hired man. He has now one of the best farms in the town, and is adding acre to acre. Whatever he does is done well. He never seems to be in a hurry. But he commences to plow in the spring before some of us begin to think about getting the plows ready, and he has ten or twenty acres of barley sown before some of us have plowed a furrow. He is always ahead. Everything is in its place; everything in good repair and ready for use at a moment's notice. His land is getting cleaner every year—and I was going to say richer, but I am not so sure on this latter point. I have sometimes thought he was running his land rather hard. But there is certainly no diminution in the crops. His farm would sell for 50 per cent more than he paid for it, while other farms have not increased in value. The secret of success, in his case, is first in the man himself—in his industry, sobriety, and good judgment. And in the next place I think it is due principally to the fact that he plows early, and plows late, and plows well, and plows often; and he uses the harrow and the roller until his soil is mellow and in good order for the seed. Then he cultivates his corn and potatoes and beans the moment he can see the rows, and he suffers not a weed to grow and go to seed. I ought to add that he has five energetic sons to help him, and while he hires little or no labor, there is a large amount of work done on the farm. In fact, say what you will, there is, never has been, and never will be, good farming without the expenditure of considerable labor.—"I have always employed a good many men," said John Johnston, and all really successful farmers, I think, would be obliged to say the same thing.

We have a steam thrashing machine just introduced for the first time into this neighborhood. I have long wanted to thrash by steam. Two or three days thrashing hurts my horses more than a month's ordinary work. They have to go round and round, the right hand side and legs of the

horse traveling about one-eighth faster than the left side. They are constantly pulling "on a twist." This can not be avoided. I always give the outside horse, which has to travel about one-fifth faster than the inside horse, a longer portion of the evener. Or rather, we bore a hole about three inches from the end of the left half of the evener. This gives the inside horse, which does not travel so far, a heavier load to pull. The thrashers never seem to take kindly to this arrangement, and do not adopt it with their own horses. But they give no reason. It seems hardly fair to make a horse that has to walk, say 25 miles a day, pull as hard as one by his side that only walks 20 miles. I have a favorite horse that has great pluck and endurance. He is always bound to keep ahead of any horse he is with. But put him on to a sweep-power, and let him be the outside horse, and his spirit dies out of him. After a few rounds, he gives up in dispair. He is a changed horse. There is no life nor pluck in him. He lags behind. At the plow or on the road he never needs a whip. He is always wide awake and always ahead. But on the machine, the driver is constantly saying "get



EVENER FOR THRASHING MACHINE.

up, Tom"; but neither word nor whip will make him keep up with the inside horse. I fancy the inside horse, who, during all the other days in the year has to see "Tom" keep ahead of him, rather enjoys Tom's humiliation on thrashing days. Poor Tom, he sometimes makes me angry by not keeping step with the other horse on the road; but I cannot but feel sorry for him when on the machine. I would not treat a poor horse so. I want to thrash by steam.

But here comes in a difficulty. How about the insurance? I am insured for three years. I pay $6 per thousand for three years. And I use a steamer for cooking food all the time, and no objection. But if I want to bring on a steamer to thrash with, I must pay, as I understand the matter, $10 a thousand extra for one year, and am then hedged in with a set of the most minute regulations, neglect of any of which invalidates the whole policy. I am insured for say $10,000. I pay $60 for three years. I want to thrash for two days.—"Well, we will give you a 'permit,' *provided* you do so and so. You must have a pit of water under the fire-box, and have water constantly near, and you must keep a special watchman every minute, night and day, and at meal times."—That is all right, I say. Anything to pay?—"Oh, yes, we charge $1.00 per hundred."—What, for two days?—"No, *for a year*, but you must only thrash one harvest."—But I do not want it for a year. I am already insured with you for three years. I can thrash all I have to thrash in two or three days, and the steam engine will then be removed. How much extra must I pay for two days?—"*One hundred dollars.*"—In other words, they ordinarily insure me on ten thousand dollars, at the rate of *eleven cents* for two days, but for two days' thrashing with a steam engine, I must pay one hundred dollars *extra!* A flashy Insurance Agent, with a cigar in his mouth, matches in his pocket, and no brains in his head, is a much more dangerous article among farm buildings, than a steam engine. I think farmers should keep the ground on which he stands, well saturated with water, and be very careful *not* to wet the choice specimen of humanity.

CONCRETE ROOFS.—A fire-proof roof may be made of cement. A flat roof is no more costly in money or space, than a peaked roof, and such a roof, if made of boards covered with a coating of cement, of water-lime and sand, and then another of asphalt, is absolutely safe against fire from without. It is easily repaired when necessary, and a brick or stone house thus finished, is as secure as it is possible to make it. In view of the increasing risk from fires, and the increased cost of insurance on country houses, buildings should be made fire-proof as far as possible.

Tim Bunker on Tramps.

How to Cure them.

"That is what I call 'rubbing it in,'" said Jake Frink, as he stopped at the wood-pile yesterday morning with the saddest expression upon his face I have seen in a month.

"Rubbing what in?" inquired Seth Twiggs, drawing a match across the end of a log upon which he was sitting, and lighting his pipe.

"Why, haint you heerd on't yet? Ye see, tew tramps called at our house yesterday forenoon, and found Polly ironing. They was big stout fellers, and I was out in the corn-field hoein. They said they had bo't a shad out of a wagon in the street, and would like to cook it over her fire, as they was hungry and hadn't had anything to eat for tew days. Polly didn't like to rile up the fellers by saying no, and as the fire was all agoin', she said they might cook the fish. So they cooked the shad, and Polly sot on a hull loaf of rye bread, and a lot of Johnny cake, and she said they eat as if they hadn't seen any vittles in a week. They was very purlite, and thanked her for her kindness. When Polly Frink come to git dinner for her men folks, her eyes opened sum. The shad she got from market that mornin' and hung up in the sink-room was nowhere to be found. At fust she thought the cat had got it. But the cat was shut up down seller. Then she begun to smell a mice. Don't you think them scoundrels had stole Polly's shad and cooked it before her eyes? That's what I call rubbing it in."

"Sarved you jest right," said Seth Twiggs, whose eyes were twinkling through the clouds of smoke. "If you haint any more sense then to keep open doors for every loafin' lazy cur that comes along, you desarve to be took in in the same way. Them critters will travel jest as long as they can find any body to feed 'em. They hate work worse than pizen, and they jest mean to live by spungin'. They haint got any homes, and won't have as long as they can find fools enough to feed 'em without work. Such chaps don't git any fodder at our house, I tell you."

"It is a growing evil," said Deacon Smith, who has been first Selectman in Hookertown for the last five years. "These tramps cost the town over five hundred dollars last year, and by the way they have come on this season, the bill will be a good deal larger this year. I do not know what we are going to do about it."

"Duno, duno!" exclaimed Seth, rising from his log and taking the pipe from his mouth. "Why, Deacon, it is plainer than the nose on yer face. It's feed these critters are after, feed without work. Stop the feed, and they will go to work and earn their own bread."

"Not as you knows on," said Jake Frink. "I guess they'd set down by the road-side and die if they had to hoe corn fur a livin'."

"Well, the world wouldn't luse much ef they did," said Seth.

"We ought to feed the hungry, ought we not?" inquired the Deacon.

"Not by a jug full," said Seth. "It's a clear purvarsion of Scripter to feed such lyin', thievin' curs as come along here every day. Parson Spooner preached the trew doctrin last Sunday—'If a man will not work, neither should he eat.' I wish he could 'a had sum of the tramps there to hear him. But the saints got their fill for onc't, I guess. You see if it's wrong fur a man to eat who won't work, it's kind o' wrong to give him food to eat. It's jest nussin' his laziness accordin' to my notion. Saints like Aunt Polly, who stop their ironin' to feed tramps with stolen shad, ought to have a new intarperter of Scripter. There's tew sides to feedin' the hungry. We shouldn't be partakers of other men's sins—and laziness is one of 'em."

It seems to me there is something in Seth's philosophy of vagabondism, which is so greatly increasing all over the country. Begging has always been common in our cities, a distinct profession imported from other lands. But the agricultural districts have been comparatively free from it, until in recent years. Now the country villages and the roads between them swarm with these tramps, generally stout, able-bodied men, but not infrequently accompanied by women. They have generally good physical health, are not emaciated with hunger, but ruddy with full feed, and very decently clad with clothing given them. They travel on leisurely from one place to another, begging at the doors, feeding upon the best, and throwing away as unsuited to their dainty appetites much more than they consume. Under pretence of needing railroad travel to get to their uncle, or cousin, in the next city, they beg money, and spend it principally for whiskey and tobacco. They apply very generally to town authorities for assistance, and get what money they can to help them into the next town. Recently the Hookertown Selectmen, on comparing notes, found that each one of the five had paid the same beggar on the same day a dollar to help him along, adding five dollars to the town expenses, and five dollars to the profits of the tramp, making a pretty good day's work. The town fathers got a little light that day. The expenses of the towns are very largely increased by aid given to tramps. It is time the farming community was waked up to this great and growing evil. We need doubtless more legislation in most of the states against this evil. Massachusetts has recently passed a good vagrant law. A work-house is wanted in every town, where the Selectmen can detain every tramp, and make him pay for his food and lodging. These houses would not be very much crowded. There is a community of feeling and of knowledge among these vagabonds, and as soon as they find that they must work for a living, they will abandon their vagrant life and seek employment. Meanwhile Seth Twiggs' philosophy is worth looking at. It is sometimes wicked to feed the hungry. Our present treatment of tramps encourages begging, lying, theft, barn burning, and every evil work.

Hookertown, Ct., June 10th, 1875. } Yours to command, TIMOTHY BUNKER, Esq.

How to Work a Bull.

One reason why bulls are vicious, or at least untrustworthy and dangerous, is that they have never passed through any course of discipline. Well fed from the first, they are permitted to learn and exercise their strength at all times, until their owners are frequently surprised to find them turn suddenly upon them without warning. Besides this, the usefulness of these animals is greatly curtailed in consequence of their idle life and good keeping, and the complaint of unfruitfulness is frequently made. A remedy for both these evils, consists in putting these animals to work. Viciousness is prevented by the discipline and training, and a bull that is broken to the yoke when young, and occasionally used, is kept in good temper and under safe restraint. He is no longer an uncertain and dangerous animal, possessing all the ferocity of a wild beast. He is kept in better health than when idle, and his value for stock purposes is greatly increased. Cases are known to us in which bulls, entirely uncertain as stock getters, and consequently broken to the yoke, have after some time become perfectly sure, and have more than doubled their owner's profit in this way alone. One of the best common bulls for producing calves we have known, was constantly worked in a cart or at the plow. The practice might be profitably followed with high bred bulls which fail of producing calves, and are consequently greatly reduced in value.

A harness for a bull consists of a yoke and bow, shaped as shown in figure 1. The yoke is made to fit the neck snugly, with a curve sufficient to bring the ends low down at the sides. At each end there is a strong bolt and ring. The rings are made large enough to admit the end of a cart shaft, a hold-back being fixed on the under side of the shaft, as shown in fig. 2. A draft-chain hooks into the eye

of each bolt. A belly-band is buckled around the animal's body. This harness is very light and easy, and there is nothing about it to chafe or worry the bull. The harness for plowing or cultivating, consists of the same yoke and bow, and a pair of draft chains, shown in fig. 3, which hook into the rings on the yoke. A broad leather band passes over the animal's back arranged as to length to suit his hight, and to allow the chains to hang in the line of draft, without pressing on the back. There are rings on the lower ends of the chains, by which they are attached to the hooks of the whiffle-tree. The length of yoke should be adapted to the size of the bull, but should not be so long as to give too much room between the shafts or the draft chains, nor so short as to allow them to chafe the animal's sides. In working a bull it is best to use gentleness with firmness, and to avoid irritating or worrying the animal, so as to provoke his temper. The same harness may be used to work cows, for there are many cases in which they may be worked to advantage as well as a bull. A yoke of Dutch cows were exhibited at the New England Agricultural Fair, of 1873, which had done all the plowing and hauling of a 30-acre farm, without failing in the least in their milk, and without any injury whatever to their calves. If this can be done in one case, it is worth considering if it may not be done in other cases with equal profit.

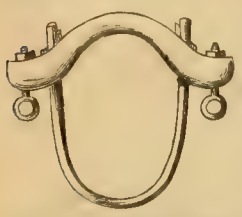


Fig. 1.—YOKE AND BOW.

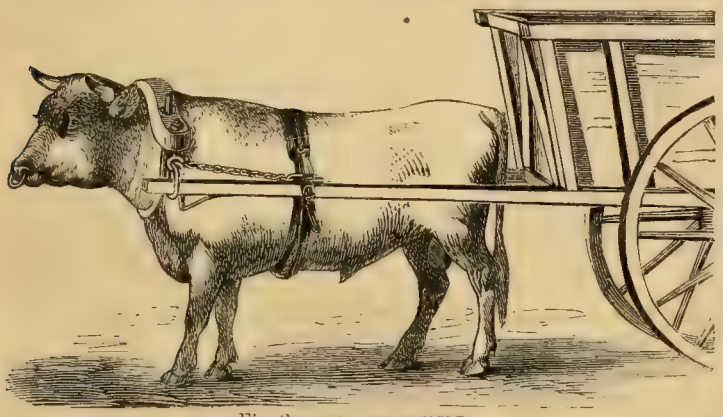


Fig. 2.—BULL HARNESSED.

Fig. 3.—PLOW HARNESS.

Chicken Coops.

The constant stream of enquiries which are made respecting the diseases of chickens and fowls, shows that something is wrong in their treatment. Poultry generally suffer from preventible ills. It is almost useless, and rarely ever worth while to treat sick poultry. A chicken is hardly worth the trouble required to physic it, and nine out of ten die in spite of all the treatment that can be given them. Poultry are naturally subject to very few diseases. If kept clean, not over fed, not cooped up close, kept from foul putrid food, supplied with clean water regularly, and have abundant pure air in their roosting places, they live and thrive without any trouble, except in rare cases. The fatal disorders, which result from ill-treatment, cannot be cured by medicine. It is too late. The mischief has been done when the first symptoms appear, and the best procedure is generally to kill the diseased fowls, and save the rest by sanitary measures.

The foundation of the various poultry diseases is generally laid while the young chicks are in the coops. There they are crowded in a confined place, which is frequently damp and unclean. They are shut up close at night in these impure quarters, or they are allowed to go forth early in the morning, while the grass is wet with dew, and become chilled. Some die and some survive to live unhealthily and die finally of roup or cholera. To prevent these troubles, the chickens while young, should have the very best of care. The coops should be so made as to secure cleanliness, dryness, ventilation, safety, and to control the movements of the chickens. A coop of this character, which is very convenient in use, is shown in the accompanying illustrations. It is not costly, and it will pay to use it for common chickens. It is portable, having handles by which it can be lifted while closed, and moved to fresh clean ground. It therefore secures cleanliness, as ground that has been occupied by a number of chickens for a few days, becomes foul and unwholesome. It is also provided with a floor-board or drawer, which can be withdrawn every day, and cleaned. If this is supplied with fresh sand or earth daily, the coop will be kept clean and sweet, and the manure dropped may be preserved for use. It secures dryness, because it is raised from the ground by feet at the corners, and is covered with a broad sheltering roof. It has good ventilation, even when closed, by means of the wire gauze at the front, and by holes in the ends, which should also be covered with wire gauze. It is safe; no chicken can be killed in moving it; it is shut up at night, so that no rats nor weasels can enter, and the chicks cannot roam abroad when the ground is wet. The movements of the hen and chickens can be controlled with facility, as the roof is hinged at the peak, and opens to admit or remove the hen. The door at the front is hinged, and when opened, is let down to the ground, and makes a sloping platform upon which the chickens go in or out, and when closed is secured by a button. Twice in the season the coops should be white-washed with hot fresh lime; which will keep them free from vermin. Figure 1 shows a front view of the completed coop, arranged for two hens. Figure 2 gives the rear view with the floor withdrawn, to be emptied and refilled. Figure 3 shows the shape of the movable floor. In fig. 4 is a section of the coop through the middle, showing the manner in which it is put together. There is economy in using such a coop as this, as one hen, when well cared for, may be made to bring up two or three broods together, and the hens discarded as mothers go to laying again.

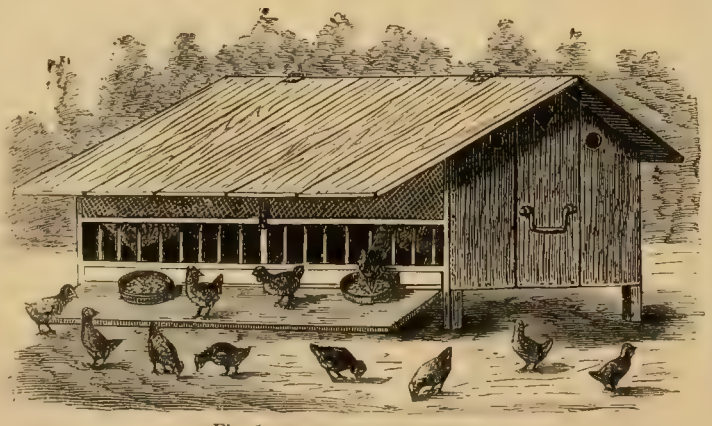


Fig. 1.—FRONT VIEW OF COOP.

Fig. 2.—REAR VIEW OF COOP.

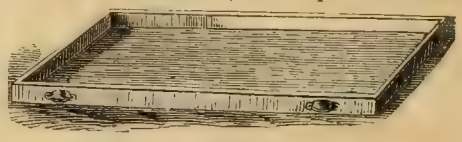


Fig. 3.—EARTH DRAWER.

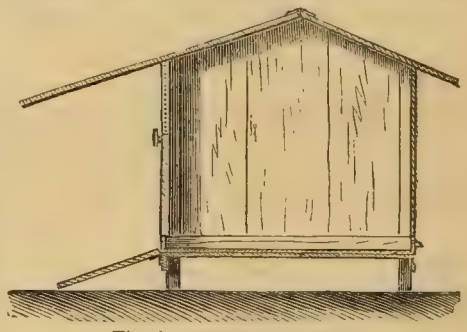
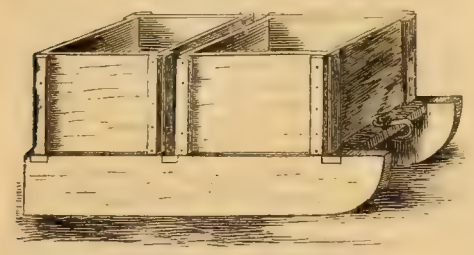


Fig. 4.—SECTION OF COOP.

Harvesting Castor Beans.

In some of the western states, the Castor Bean is a convenient and profitable crop. While the planting and cultivating are not more expensive or troublesome than for a crop of corn; the chief trouble is in harvesting the crop, which, ripening irregularly, makes it necessary to go over the field at least four times, to prevent a considerable loss of the beans. These repeated passages through the field must be provided for in planting, and some proper arrangement must be made for gathering the beans. Some planters leave a space of six feet between every four rows, in which to pass back and forth, and then use a sled, such as is shown in the accompanying illustration, to collect the beans as they ripen. The sled is drawn by one horse, and carries two common dry goods boxes, into which the spikes are thrown as they are cut; afterwards they are carried to the "popping yard." When the spikes have turned to a dark green color, or the lower pods on the spike are ready to burst open, they should be gathered at once. Those spikes which still have the light bloom upon them, are not ready for harvesting, and should be left to ripen for a few days longer. If they are cut before they are ripe, the beans will be light and imperfect, and not fit for planting or for sale. Before the whole crop is ripe, it will be necessary to go over the field four

times at least, at such intervals as may be found necessary to save a loss of beans by shelling and scattering. Two sleds of the kind shown in the illustration, will be needed for 10 acres, and three will be enough for 20 acres. The runners are made of two-inch plank, from six to twelve inches wide, which are fastened together by two or three other planks, spiked cross-wise upon them. A narrow strip of board may be nailed on each side, to keep the boxes in place. The loose boxes are more convenient than fixed ones, as the load may be quickly dumped from them into the yard where the beans are to pop out. The yard may be a smooth piece of hard prairie, on which the grass has been cut close to the ground, left to dry, and then burned and swept clean of stubble, or a barn-yard fenced with boards may be used. For 20 acres, a yard 100 feet square will be needed. The ground is swept clean and the spikes thrown upon it, a border of at least 20 feet wide being left all around, to catch

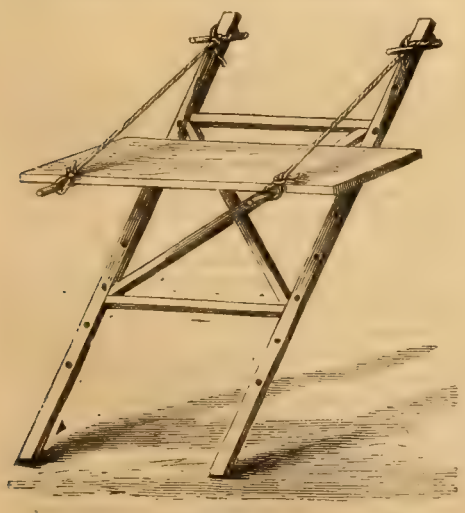


SLED FOR CASTOR BEANS.

those beans that pop outwards, as the capsules open forcibly. After two days the heap should be turned over with a garden rake, or a hay rake. At the end of four or five days the beans will be nearly all out, and the refuse may be raked into a pile where it should be left until the whole crop is harvested. Those beans that have not popped out, can then be gathered together the last thing. The beans and burs are then swept up and separated in a common fanning mill, after which the beans are put in bags for sale. The harvesting of this crop being light easy work, may all be done by children, the largest boy or girl taking charge of the horse.

A Stacking Stage.

When straw from the thrashing machine is stacked in a hurry, it is very convenient to have a stage upon which one of the pitchers may stand, to reach the top of the stack. A stage is also very useful for finishing off a round hay or grain stack. There are many other uses upon the farm, or in the orchard, or garden, to which this stage, shown in the annexed illustration, may be put. It is useful in gathering fruit, in painting or repairing buildings, or in digging deep cellars, when it is necessary to make two lifts. It is very simple in con-

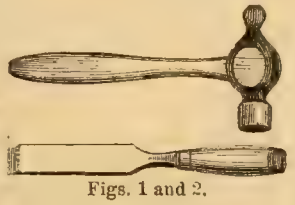


STACKING STAGE.

struction. A stout frame is made, much like a broad ladder without rungs, and joined together by cross bars and braces. A series of holes are bored, into which two bars are fitted, and a platform as long and wide as may be needed, is made to rest upon the bars. The bars are supported by chains or ropes, as shown in the engraving, or by stiff braces underneath, if the ropes would be in the way of doing the work in hand. A platform six feet long, by three broad, will be required in stacking, but for other purposes a much narrower one may be used. By changing the construction somewhat, the frames may be made to answer the double purpose of sides for wagon racks, for hauling hay or grain from the field, as well as for a support for the stage.

Hints for the Workshop.

The hammer best suited for all the purposes of the farm-workshop is one made very broad across the eye, so as to take a wide handle; such a hammer is shown in fig. 1, and will be seen to be very strong in the part where they are generally the weakest. The handle is not easily broken and can



Figs. 1 and 2.
HAMMER AND CHISEL.

not come loose if properly wedged in. The hammer is thin in the eye, and is therefore lighter than an ordinary hammer of the same strength, while the weight is accumulated in the face where it is most needed. In place of the usual claw, there is a rounded nose, which can be used for riveting or doing fine work on the anvil. This hammer is a carpenters' and blacksmiths' hammer in one. The handle should be made oval, that it may not turn in the hand; the part grasped in the hand should be large enough to give a firm hold without cramping the hand in use, and the neck of the handle should be worked down so as to make it somewhat elastic, and prevent that jarring of the muscles of the hand, which is often very annoying.

The handles of chisels are very apt to be spoiled by battering or splitting in use; a method of preventing this is shown in fig. 2. The top of the handle is sawed off, and two pieces of sole or belt leather cut to fit neatly, with a slight bevel upward, are tacked on with wrought or copper nails. The handle will then wear much longer than without this precaution, and if a hammer should be used to strike it, no injury will be done, nor will the face of the mallet be beaten out of shape, as often happens when the handles have iron rings.

About Splitting Rails.

For split rails only straight grained timber should be chosen. It is better to have knotty twisted timber sawn into posts and rails, or boards, than to waste it by working it up into poor weak splintered rails. The logs being chosen, the tools required are a maul, a few sharp-pointed iron wedges, two axes, and a dozen wedges of some tough hard wood. These wedges are best made of second growth hickory, or other tough wood of uneven grain. Small trees, of four inches in diameter, grown upon poor rocky soil, make the best wedges. They should be made with a slight ridge in the center of the bevel from shoulder to point, and above the shoulder the edge should be beveled off all round, to prevent battering and splitting the top. The form of the wooden wedge, as well as that of a well-shaped maul, is shown in fig. 1. The maul or beetle should be protected with iron rings, and the handle ought not to be more than twenty-four inches long. The iron wedges should be square at the heel, tapering evenly to the point, which should be steeled and be kept ground sharp. The log to be split should be first marked on the line of the split with an ax driven by light blows of the maul. Two iron wedges are then driven in by alternate blows, and if the log is large, three will be needed. A single wedge may be buried in the center of the log without splitting it, but by using two at the same time an even seam will be opened. Wooden wedges are then driven in the opening on the side of the log, until it is split in halves from end to end. When very large pine

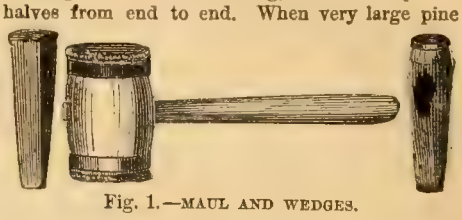


Fig. 1.—MAUL AND WEDGES.

logs are to be split, a thick slab should be taken off from each side, and the central part again reduced by portions taken off each side of that, and the square center is then split as if it were a small log. If the timber is inclined to run out and not split straight, an ax is driven in with the maul along the line where the timber ought to split, and iron wedges are driven in along this line; any "strings" which may remain are cut through with the ax. The half of the log is then split in the manner shown in the illustration into two quarters, commencing at one end. The quarters are split somewhat differently. Instead of commencing at the end, the sharp wedges are driven in the side, and the central portion of the piece of timber is split off first. The next layer is then taken, which is split again into two parts, always driving the wedges in the middle, and looking out for the running of the timber, and preventing it as already explained. The outside portion is then split into halves, and

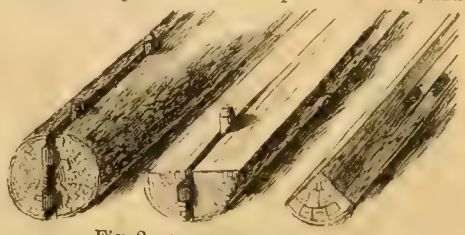


Fig. 2.—MANNER OF SPLITTING.

then into quarters, or into five rails if necessary. These methods of splitting are shown in fig. 2.

Two Handy Bolt Wrenches.

A wrench should be carried along with every vehicle, implement, or machine, in which there are bolts that are liable to work loose. A wrench that will fit bolts or nuts of various sizes, such as is illustrated at figure 1, is very convenient. It is made of light square bar iron, and has a sliding jaw upon it. By moving this jaw up or down, the wrench may be made to fit several sizes of nuts. Another handy wrench, a description of which is given us by a correspondent, is shown at figure 2. This is an ordinary wagon bolt and wrench, for the "hammer strap."

Fig. 1. WRENCH.

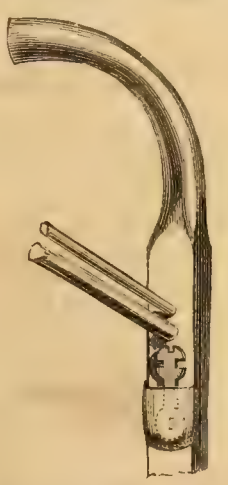


Fig. 3.—WRENCH ON PLOW.

Fig. 2.—WRENCH.

In the wings of the wagon wrench, however, are cut square holes of different sizes, as ¾, 1, and 1¼

inch in diameter, as shown at figure 2. The same correspondent also describes a plan of carrying a wrench upon a plow handle, shown at figure 3. A piece of leather cut from an old boot, is nailed on the inside of the plow handle, on the left or land side of the plow, and near the upper cross-bar, so that the cross-bar may help to retain the wrench in the pocket thus made. An extra share-bolt may also be carried in the pocket. By the use of this contrivance, an occasional journey from the field to the tool shop may be avoided.

A Hoist-Wheel With Brake.

A hoisting apparatus that may be made to sustain its load at any desired point by means of a self-acting brake, is often very useful upon a farm. A contrivance of this kind is shown in the illustration. It consists of a grooved hoisting-wheel with a short flanged barrel at one side, and an iron or wooden axle with iron gudgeons. This may be suspended in a fixed frame, or by means of a chain or a rope to a hook hung wherever it may be wanted temporarily. The groove is made only just deep enough to permit the hoisting rope to be half sunk within it. The rope by which the lift is taken, has four or five turns around the barrel, which are sufficient to give it a firm hold, and this is assisted by the weight suspended at the end opposite the one to which the load is attached. The portion which holds the rope consists of a clog of hard wood, which turns loosely upon a bolt which is rivited or screwed to one end of the link, at *a*. Its proper position is such that the rope as it is drawn down clears it easily. When the load is elevated sufficiently, it may be kept suspended at any point by pulling the hoisting rope forward, when the rope is brought against the clog, which is lifted by the pressure, and as the rope is slackened, the clog is pressed tightly against it; the greater the weight the more securely it is held. When the rope is drawn down again, the brake is loosened at once, releases the rope, and the clog falls back, where it remains until again called into action. This simple contrivance is especially useful in the barn, in slaughtering animals, in raising stones or timbers which are not of very great weight, and many similar services.

HOIST-WHEEL.

Why They do not Stay on the Farm.

There is no denying it; the boys do not stay upon the farm, and will not unless some constraint is put upon them. There is no getting over the fact that this is the rule all through the older states. Go into any exclusively agricultural district, and you will find real estate marvelously cheap. Farms are advertised within thirty miles of Boston, and all through Massachusetts, for prices that will barely cover the first cost of the buildings put upon them. We know of good farms within two miles of good markets, sold this spring for fourteen dollars an acre. From three to five thousand dollars will buy a fair farm of from one to two hundred acres, with substantial house and barn and other out-buildings, within easy reach of church, mill, school, post-office and market, in almost any county in New England. There is no larger population in these districts than there was fifty years ago, and there is no more wealth. In some of them both population and wealth have decreased largely. Farm houses that once sheltered respectable and intelligent families, have gone to decay, and nothing but the old chimney is left. Meadows and pastures are fast growing up to wood, and lilacs and apple blossoms mingle their perfume with birches and oaks in April and May. Such are the facts. Why is it? There are many causes operating to this end: the new land in the west, the adventure of mining life in the mountains, the new fields open in the cotton belt, speculation and business in the neighboring village or city—but above all these is the social leanness and starvation of American agricultural life. We are speaking now of the isolated farming districts, from five to ten miles from the market town. Here is the old style school house, and the means of education are just as they were fifty years ago or more; the winter school of four months, taught by master, and summer school of three, taught by mistress, both hired at cheapest rates, and some are still "boarding round." The old church is yet there for Sunday gatherings, and church and school are about the only occasions of social life known to old and young, except in rare visits to other communities. The main thing is work, early and late, summer and winter; and the chief problem for the brain to solve, is how to get a living. The whole population is not so much engaged in living, and in enjoying life, as in getting ready to live. If we look in-doors there is rather a lean larder the year round. Salt junk and potatoes are the main stay. The body is not well provided for. The search for a soft bed is not well rewarded. The intellectual life is still more poorly fed. Often no paper at all is taken. If one is afforded, it is likely to be a political journal. Agricultural papers are the rare exception. There is little but gossip for the mind to feed upon. The school is often neglected because the boys and girls are wanted at home. The church is neglected because it is not convenient to go to meeting. The horse sheds are not built, the horse is lame, the carriage has a broken spring, or more likely, the preacher gives out too much light for the surrounding darkness. Bats love twilight. The muscles are overtaxed, and vitality is mainly occupied in sustaining the waste of muscle. There is no time for recalling the daily news, for discussing agricultural topics even, or for the enjoyment of social life at the table. Father and mother live under pressure all the while. Hearty sympathetic interest in any thing outside of the farm, is almost unknown. Smiles are few, and jokes still fewer. Young America on the farm revolts against this eternal round of solemn facts. He wants a little variety in his diet for his body, and for the mind. Salt junk twelve months in the year, palls by the time he is fourteen, and at fifteen he runs from it to the city, where he can get a taste of the eggs and chickens his father raises. He wants something to think of besides picking stones and churning butter, riding horse to plow, and hoeing a half row in weedy soil. He has seen agricultural papers with pictures of fine horses and cattle, houses, and barns, labor saving machines and tools. He would like to read about these things, and realize the pictures. He wants more papers and books, lyceums, lectures, and especially more society. He wants to enjoy life a little while he is young, and not to wait for grey hairs before he begins to live.—Here is the cause of our waning agriculture and deserted farms. The remedy is more easily seen than applied. We must have more living while we are getting ready to live.

CONNECTICUT.

[Our correspondent has drawn, we think, much too dark a picture of farming in New England. "*Good* farms," at $14 an acre, are an exception in almost every county in New England. Recent statistics show that the percentage of children attending school is greater in Connecticut than in any other state in the Union, with a single exception perhaps, and we see a change for the better in the county school-houses and their surroundings, over what we observed 25 years ago. Still, there is great room for improvement in many respects referred to by our correspondent. A copy of this journal placed in every farmer's family would have a decidedly good influence.—ED.]

The Bovine Mind.

Huc & Gabet in their delightful Journal of Life in Thibet, relate the following: "These long-tailed cows are so restive and difficult to milk, that, to keep them at all quiet, the herdsman has to give them a calf to lick meanwhile. But for this device not a single drop of milk could be obtained from them. One day a Lama herdsman who lived in the same house with ourselves, came with a long dismal face, to announce that his cow had calved during the night, and that, unfortunately, the calf was dying. It died in the course of the day. The Lama forthwith skinned the poor beast, and stuffed it with hay. This proceeding surprised us at first, for the Lama had by no means the air of a man likely to give himself the luxury of a cabinet of natural history. When the operation was completed, we found that the hay-calf had neither feet nor head; whereupon it occurred to us that, after all, it was perhaps a pillow that the Lama contemplated. We were in error, but the error was not dissipated until the next morning, when our herdsman went to milk his cow. Seeing him issue forth, the pail in one hand and the hay-calf under the other arm, the fancy occurred to us to follow him. His first proceeding was to put the hay-calf down before the cow. He then turned to milk the cow herself. The mamma at first opened enormous eyes at her beloved infant; by degrees she stooped her head towards it, then smelt at it, sneezed three or four times, and at last proceeded to lick it with the most delightful tenderness. This spectacle grated against our sensibilities; it seemed to us that he who first invented this parody upon one of the most touching incidents in nature, must have been a man without a heart. A somewhat burlesque circumstance occurred one day to modify the indignation with which this treachery inspired us. By dint of caressing and licking her little calf, the tender parent one fine morning unripped it; the hay issued from within, and the cow, manifesting not the slightest surprise nor agitation, proceeded tranquilly to devour the unexpected provender."

"This last touch," adds Col. Hamerton, in his Chapters on Animals, "entirely paints the brute. She has recognized her offspring by the smell, chiefly, and never having heard of anatomy, is not surprised when the internal organs are found to consist simply of hay. And why not eat the hay? The absence of surprise at the discovery, the immediateness of the decision to eat the hay, are perfectly natural in a cow, and if they surprise us it is only because we do not fully realize the state of the bovine mind. If we reflect, however, we must perceive that a cow can be aware of no reason why calves should not be constructed internally of hay. [Indeed, if the cow reasons upon the matter, she knows that she has taken an abundance of hay into her own interior, and why shouldn't some of it appear in her calf?—ED.] On the other hand, the bovine mind cannot be wanting in its own kind of intelligence; for oxen know their masters, and when in harness are remarkable for a very accurate and delicate kind of obedience; indeed, the horse is light-headed and careless in comparison with them. Animals, like the great majority of the human race, observe only what concerns them, and see everything simply in the relation which it bears to themselves." These remarks are so good and pertinent that we cull one or two more relating to another domestic animal.

"The effort of dramatic power necessary to imagine the life of another person is very considerable, and few minds are capable of it; but it is much easier to imagine the sensations of a farmer than those of his horse. The main difficulty in conceiving the mental state of animals is, that the moment we think of them as *human* we are lost. A human being as ignorant as a horse would be an idiot and act with an idiot's lack of sense and incapacity for sequence. But the horse is not an idiot; he has a mind at once clear and sane, and is very observant in his own way. Most domestic animals are as keenly alive to their own interests as a man of business.

"In our estimates of animal character we always commit one of two mistakes; either we conclude

that the beasts have great knowledge because they seem so clever; or else we fancy that they must be stupid, because we have ascertained that they are ignorant; so that, on the one hand, we constantly see animals severely punished for not having known what they could only have learned through human language; and, on the other hand, we find men very frequently underrating the wonderful natural intelligence of the brute creation, and treating animals without the least consideration for their feelings, which are often highly sensitive."

How a good Farm Wagon should be Built.

The original cost of vehicles in use among farmers, exceeds $200 for each farm. Many of these are unsuitable for the purpose intended, poorly made, and very badly cared for. Scarcely any piece of mechanism is put to more severe strains, or suffers more from exposure, than the farm wagon. When a farmer buys a wagon he should look well to quality rather than to price. A good wagon with good care should stand for 12 to 15 years. No two-horse wagon should be used with tires less than 1¾ inch in width. The pole should be of the best straight white ash, rather small at the end, and the largest part about 20 inches ahead of the evener. The evener and neck yoke should be of good length, as the team will then work better on rough roads. The tires should be a very little wider than the felloes, so that the paint will not wear off; they should be bent true and fit tightly. A wheel to carry loads should have about ¾ inch dish, and nearly all of this should be made in the wheel and not drawn over with the tire, else the tenons will be strained and the spokes loosened. The hub should be firm, solid, and fine-grained, but not "too hard;" the spokes of fine grained second growth oak; the tenons should be smooth and uniform with a little more taper than the mortice, and 3/16 of an inch wider at the shoulder than the mortice, and 3/32 inch thicker. If the hubs are well banded there will be no difficulty in driving, if the points are smeared with tar. The spokes must be perfectly dry, two years seasoned, and the tenons after having been thoroughly warmed to drive out all atmospheric moisture, should be driven until the shoulders come down firm on to the hub, but not driven into the hub so as to spoil the shoulder and the grain of the hub. The spokes on the fore wheels should be driven over, 5/16 of an inch, and the hind ones ⅜ of an inch. The felloes should be of the finest grained oak to be procured; good forest timber is better than young second growth. When they are bored and fitted they should be put on as soon as possible, and left on so that they may settle on to the tenons, which they should fit tightly. They should not be painted until they have been entirely finished two weeks, and if the felloes are rolled in a sheet-iron tank of boiling linseed oil, the tires will not need re-setting until worn out. After boiling they should be wiped with old rags, as the paint will not adhere well where the oil is allowed to dry on. Good, sound, hard maple, which has been dried under cover, away from the sun and rain, but with free circulation of air, makes the best axle, although some hickory is very good. The skeins should be set exactly level on the bottom, and all first-class skeins have the gather cast in them. The reach should be made of a good tough stick, and not too large, as it must either spring or break. When the wagon is painted, nothing but the best English orange mineral, which is better than our red lead, should be used for the first coat. This should be ground in five parts boiled oil to one part Japan dryer, using a very little turpentine. This coat is put on all the woodwork before it goes to the blacksmith, and if the felloes have not been treated with boiled oil, the treads of them should have two coats, and the smith cautioned to shape his tire well before heating, and not to burn quite all of the paint off. The second coat is put on after it leaves the smith, and should be ground in boiled oil and Japan, half and half. The third and last coat may be the same, or of one part oil, one part Japan, and one part No. 1 coach varnish. The wood-work should be well sand-papered before priming, and lightly after it leaves the smith-shop, and after removing all grease and smoke. After painting, the wagon may be striped neatly with black, and a good heavy coat of coach varnish given. The varnish should never be permitted to wear through to the striping, but renewed when necessary, and if it has been well done with good stock, it will stay on for twelve years. A wagon with 3½ inch skeins, made in this manner, will carry 6,000 lbs., and last fifteen or twenty years. The box should be made with extra side-boards, primed and painted with white lead and umber, half and half in weight, darkened with a little lamp-black, and mixed for priming in the same manner as the red. Then two coats with oil and Japan half and half, should be given, after which a coat of best medium chrome green ground in Japan and varnish half and half, striped with plain, broad, black lines, and the inside panel of fine white lines. The above information is for the benefit of the purchaser, and not the builder. E. H.

CANANDAIGUA, N. Y.

SKIM CHEESE.—Skim cheese is quoted in the market at 2 to 3 cents a pound. This will not cover the cost of manufacture, boxes, and freight. The dairymen had better have given the milk to the hogs. These quotations go to show the public estimation in which skim cheese is held. But it is said if this worthless cheese could have some tallow-oil mixed with it, it would pass with consumers as full cream cheese. We do not think that dairymen can be brought to believe this, although some authorities on dairy matters try to induce them to believe it. It is a healthy sign of the public taste, that skim cheese brings only the price it does. It is very certain that the public taste will as strongly condemn the mixture of skim milk and tallow, although the latter may be sent out as "oleo-margarine"; and equally certain that those who go into this business of adulteration, will lose by it. "Oleo-margarine" cheese can never be an honest dairy product, and dairymen, who avoid it, will retain their reputation.

How to Get Large Birds.

Many purchasers of fine stock, or of their immediate descendants, fail to secure as fine birds as the seller raises, and are unhappy. They hear of eighteen pound Light or Dark Brahma cocks, and twelve pound hens of some noted breeder, or of Mammoth bronze turkeys weighing sixty or more pounds to the pair. They order the eggs or young birds of such stock, hand them over to some servant or neighbor, who is not skilled in breeding, feeds irregularly, or regularly stints them, and at the end of six months wonder that they have not first-class birds equal to the advertisement. They think they have been cheated, and set down the breeder as a rogue. There are men no doubt in the poultry business who cannot be trusted, but there are also a large number of men who have brought capital, skill, and integrity to their business, and who would not knowingly let a poor fowl go from their yards. They sell, uniformly, stock true to name, but at so early an age that the development does not always answer expectations. A turkey does not get its full growth until the third year, but most of them are sold at from four to eight months. Ducks and hens are not fully developed until the second year, and yet most of them are sold under nine months' old. While it is true that large stock is essential to the raising of large birds, another factor is quite as essential. This is abundant feed during the whole period of growth. The grand results attained by our skillful breeders are reached by care and feed, after they have selected their stock. To make the most of a young bird, it should be fed with a variety of food at least five times a day, from daylight in the morning until the middle of the afternoon. It is well to omit late feeding to give time for digestion. Slack or full feed will make a difference of six pounds in the weight of a turkey gobbler at eight months old, which is the most of the difference between an ordinary and an extraordinary bird. Persons who buy thoroughbred young birds of good breeders should not expect to buy the skill of the breeder with his stock. That is a commodity that cannot be bought for money. It can only be gained by daily attention to the details of poultry breeding.

The Country the Place for Mechanics.

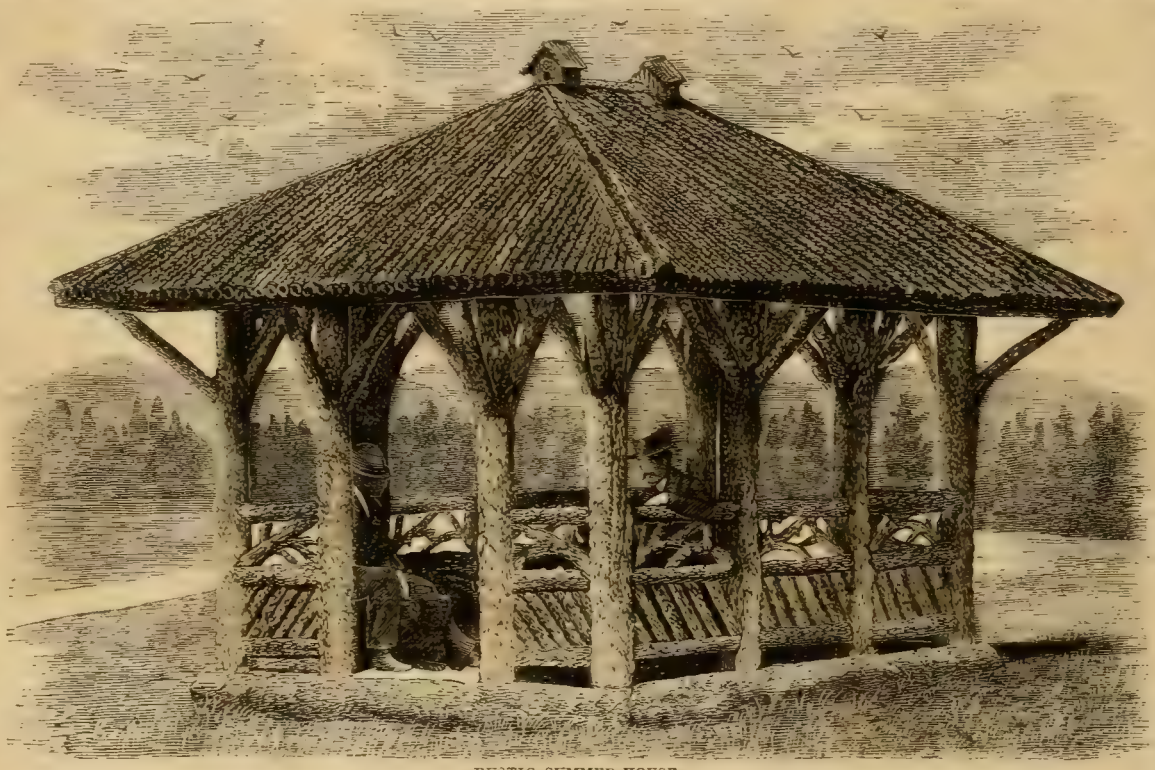
The demand for mechanics in country places is always growing. It is a mistake to suppose that carpenters, bricklayers, and masons need to crowd into a city to find employment. In the country, where a mechanic can have a few acres of land, upon which he may spend part of his time not otherwise occupied, he need never be short of work. He can keep a horse, and ride to his work, losing less time in doing so, than if he lived in a city. He can keep a cow, some pigs, and fowls, and raise, with the help of his children, a large share of his supplies. His family will have better health, and enjoy themselves much more than in the crowded city, having flowers and a garden to amuse them. They may dress less expensively, will wear out fewer clothes, and the rent will not have to be provided for every month, or if it has, it will be but a trifle compared with city rents. Farmers everywhere are improving their buildings, putting up better barns and fences, and competent country mechanics could procure profitable jobs, and could do the work at much cheaper rates than in cities. One well finished job brings others, for nothing is so catching as improvement, and our experience has been that many farmers do without new barns or houses, because of the difficulty of procuring competent mechanics at a reasonable price. There are very few good farmers now in the east or the west that are not able to have good farm-buildings, and at the present time village mechanics have more steady employment, and can save more money, if they earn less, than those who work in the cities.

VALUE OF THE BARLEY CROP.—Fears are often expressed that barley may not be a paying crop this year, because the price was high last season. This may be so if the crop is grown solely for sale to the brewers, who require a fine sample, good color, etc., and the demand is to a great extent capricious. But why depend on the market altogether? Barley can be turned into pork as well as corn. It is excellent feed for horses, and poultry, and barley meal will make beef. Why not feed the crop if it can not be profitably sold, or at least a part of it. With two strings to the bow, the breaking of one may be risked, and so we would not hesitate to grow barley, although the brewers may not want it. As it requires good farming to grow this crop, and clean culture, it is not likely that the market can long be depressed below a paying point. As a feeding material barley stands very high, ranking very nearly as high as corn. When ground into meal, and fed with cooked potatoes, it makes sweet and excellent pork, and as a grain for horses it surpasses oats, and is more healthful as a steady feed than corn.

"WEIGH, MEASURE, AND COUNT EVERYTHING," says the *American Grocer*—which is, by the way, a most useful and excellent journal, published in the interest of storekeepers. But the advice should not be restricted to grocers, as it is especially valuable to farmers as sellers and as consumers of produce. Few farmers know exactly what they sell, and a platform scale is, we regret to say, a rare piece of barn furniture. A very important thing, and one which few farmers know exactly, is the quantity they feed to their stock, and how much a bushel of grain, a ton of hay, a quart of milk, a pound of butter, or a pound of pork costs them. A knowledge of these things is necessary if the farmer would make his business profitable, and unless he weighs, measures, and keeps account of every thing used upon or sold from the farm, he can not tell whether he is working at a profit or a loss.

Rustic Work—Portable Summer-Houses.

Our very earliest and most pleasant recollection goes back to the new western home, when we little people set up mock housekeeping—to us very real—in the *rustic* play house, constructed of crooked beech limbs. It is real to-day, after almost half a century. Connected with every house, however humble, there should be something around which the young affections and memories may cluster; and to our way of thinking, there is nothing more charming, or that will live longer in memory, than an arbor or summer-house, so constructed of rustic work as to harmonize with other natural objects. These structures may be of the simplest form, and be erected without great skill or loss of time, and without expense. Modern times have developed much taste and ingenuity in constructing a great variety of rustic arbors, seats, chairs, flower-stands, picture-frames bridges, summer-houses, etc. The material, red cedar, laurel, grape vines, etc., left as nearly as possible in their natural condition, are worked into a multiplicity of forms that are both pleasing and useful. For smaller articles, the Laurel, (*Kalmia*), with its natural crooks and gnarled roots, is excellent. For large structures, such as summer-houses, arbors, and bridges, the Red Cedar is best, for it is not only very durable, but the angles of its branches are useful, and the color of its bark harmonizes well with natural scenery....For the more elaborate structures, a natural ingenuity is required to combine irregular shapes into architectural designs—otherwise there may be only a grotesque mass, quite devoid of pleasing effect. There are a few persons who make a business of manufacturing rustic work for sale, and who go out, upon call, to put up summer-houses, bridges, and the like. Recently when at Lake Salstonstall, we noticed the rustic manufactory of James King, Esq., of New Haven, Conn., where we saw at different points a large number of men and women busily engaged, under the eye of the proprietor and other skillful workmen, preparing material and putting it together in rustic form—flower baskets and stands in great variety, chairs, settees, arbors, summer-houses, bridges, etc., etc. On examining and admiring a large rustic Summer-House, all set up complete, we were surprised to learn that it was *so arranged in sections, that it could be readily taken down*, loaded upon wagons or railway cars, and sent to any part of the country, where it could be quickly set up firmly again, with the use of a few large nails only. We immediately ordered one for our own use. It was put upon a couple of common farm wagons, sent 25 miles, and in a few hours it was all up complete, just as shown in the engraving herewith, which is copied from a photograph of it. (To forestall the charge of "vanity," or of appropriating others "good looks," suffice it to say we were not *in* the house when the picture was taken; it was "the other man.") This house has already been seen and admired by many persons. Its dimensions on the ground are 9 x 13 feet; the roof projecting all around 2 to 2½ feet, covers a space about 14 x 18 feet. The hight at the plate is 8½ feet, and at the ridge, 10½ or 11 feet. The floor is of narrow pitch pine boards, and the seats along each side of narrow chestnut boards bordered with cedar. Both of these woods and the red cedar which makes up all the rest, are almost imperishable, so that the structure may stand fifty or a hundred years even. The engraving hardly does justice to the pleasing rustic appearance of the braces and other work under and around the roof. It is a most desirable addition to our grounds, which we should be very loth to part with. As above noted, Mr. King has completed, and in process of manufacture, a great variety of summer-houses and other rustic objects, large and small. The point to which we call especial attention, is the fact that the larger structures are made in easily transportable sections. Many persons who would like to adorn their homesteads with such things cannot readily collect suitable materials and bring to their own grounds the skilled workmen needed. Such persons have now only to go and see the articles they want and order them, or send for engravings or photographs or designs, and get estimates, and then have the structure made where the men and materials are concentrated, and have the finished articles forwarded to where they are to be set up. Those having time and skill, but little money, can try building themselves.



RUSTIC SUMMER-HOUSE.

(Manufactured by James King, New Haven, Conn., and sent in sections to the residence of Mr. Orange Judd. Mr. King retains the copyright of the photograph and engraving.)

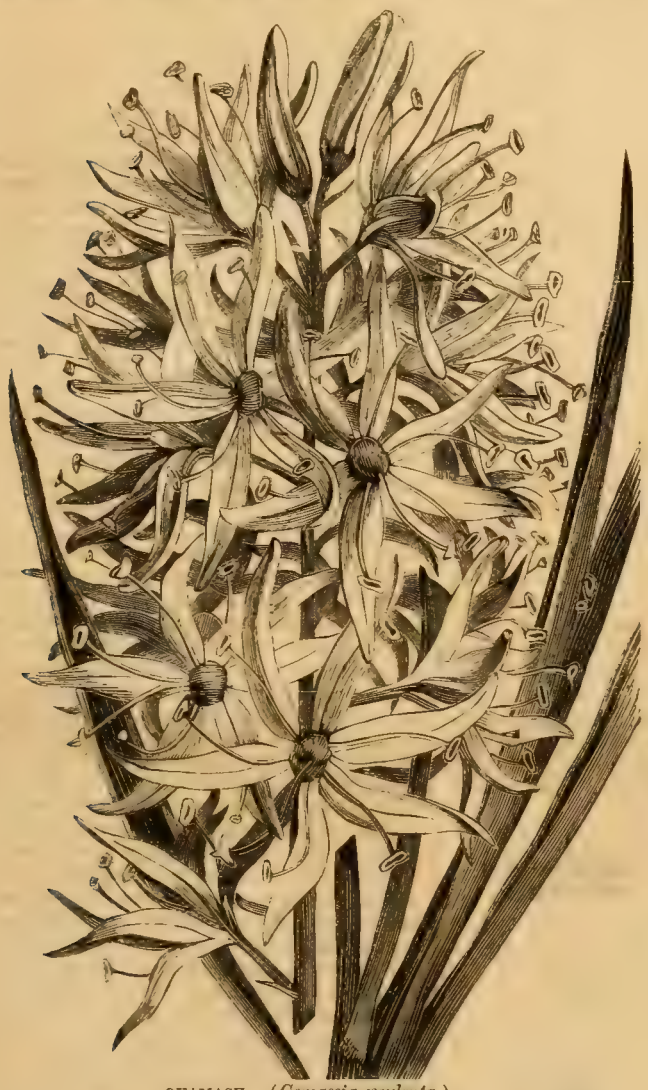
The Colorado Potato "Bug."

As long ago as 1864, we gave engravings of *the* "Potato Bug," and told all about it; since then we have repeated these, and have kept our readers advised of its eastward progress. It at one time came eastward at the rate of about 70 miles a year, but several causes have led to a more rapid travel, and last fall it was within about ten miles of the coast, some four or five years earlier than was at first predicted. Now it is at the coast, and has been especially destructive as far as Long Island. There is almost a procession of persons bringing these beetles to our office, as if they were something new; the mails bring them in great numbers; it would seem that all that we have said has been forgotten, and now we must at this late day repeat for the benefit of our eastern readers—for to those at the west it is an old story—the history of the Colorado Potato Beetle. As space is scarce, we make an old engraving save many words of description. If the vines had been examined in May, there would have been found here and there an insect like *d*, which probably came in from elsewhere, or may have been raised on the place last fall in such small numbers as to escape notice. This insect is of the size and shape shown in the engraving, yellowish or buff color, with 10 black lines on its back. A little later, orange colored eggs would have been found upon the under sides of the leaves,

COLORADO POTATO BUG.—EGG, GRUB, AND BEETLE.

shown at *a*. These hatch, and produce the larvæ, or grub, which, when first hatched, *b*, are small and blackish, but which eat vigorously,

and grow rapidly. When full grown, they are fat disgusting things like *c*, bright reddish in color, and with two rows of black dots along the sides. These drop to the ground, enter the earth, and in 10 or 12 days come out as the perfect insect, *d*, which goes on and lays eggs to provide for another brood. There are three broods in the year, though they may be found in all stages through the summer; the last brood undergoes its changes in the ground, and passes the winter there as a perfect beetle, and comes out in the spring to begin the work of laying eggs as soon as there any vines to work upon. The perfect insect and the larvæ, or grub, both eat. They feed on the tomato and egg-plant, as well as on the potato, and these vines must be watched. When they come they do not travel further east, but send on a deputation; they come to stay. Those who have them once, are likely to have them next year, and in future years. It is a serious matter, and must be met in a prompt and business-like manner. If the beetle—which we should have said is named *Doryphora decemlineata*, or the 10-lined Spearman—has its way, you will have no potatoes. In the western states the insect is looked upon as a matter of course, and accepted as a fixed fact; they conquer it, and have potatoes. It startles those who have never seen it before with its rapid increase, disgusting appearance, and wonderful voracity, but it can be conquered. If the insects appear in small numbers, they can be kept under by hand-picking, and at the same time destroying the eggs. This, if properly followed up, will keep them in subjection; but many persons do not know of their presence until the vines are overrun, and hand-picking not possible. The only thing then to be done is to use poison —Paris Green. Various poisons are offered as "sure cures," but they can not be any more effective than Paris Green, which we know all about, and as in all other cases, we advise letting all secret remedies alone. There has been much said against the use of Paris Green. It is dangerous and deadly, and every one should know it, but it has been used in all the western states for ten years, and no case is yet reported of any injury resulting from its poisoning the tuber. It is a case of Paris Green—or some similar poison—or no potatoes. We know (so far as any negative proof can go) that Paris Green does not injure the tubers. These secret poisons we know nothing about; they are new, having started up this spring, and have not, like Paris Green, stood the test of years of trial. For a full account of the use of Paris Green see the *Agriculturist* for June, p. 226, and observe all its precautions. Get the pure article, use it as there directed, and *see to it yourself*.



QUAMASH.—(*Camassia esculenta.*)

ROCKY MOUNTAIN BRAMBLE.—(*See next page.*)

The Quamash, Bulb and Flower.

Quamash, as the Indians of the Pacific coast call a plant, which is to them an important one, is not a very pleasing name, and it sounds much better when Latinized into *Camassia*, as it was by Lindley, when he made a new genus, and called the plant *Camassia esculenta*, the specific name referring to the fact that the plant is used as food by the Indians. There are two species of Camassia; the one above named is found from the Rocky Mountains westward, and the other, called the eastern Quamash, *C. Fraseri*, (*Scilla Fraseri*, Gray,) occurs from Ohio to Wisconsin and southwestward. As the plants are close relatives, and both have a bulb eaten by Indians, the eastern and western Quamash have been confused by various writers. The western Quamash, *C. esculenta*, is cultivated by European bulb-growers, and is often imported by our seedsmen and bulb dealers. Though we have tried these imported bulbs for several years in succession, we have never succeeded in getting a satisfactory flower. Having long known the plant from herbarium specimens, and it being a native, we were particularly desirous of growing it, but all our attempts with imported bulbs failed, and it was only when one of our associates procured some bulbs from their native localities that we were able to have it in flower. The onion-like bulb throws up narrow leaves about a foot long, and a flower-stem one to two feet high, bearing numerous light violet-blue flowers an inch or more in diameter in a loose raceme, each flower having at the base of its stalk a bract. The engraving gives the size and shape of the flowers, but to save room, only the flower cluster and upper parts of the leaves are shown. Mr. Rand in his "Bulb Book" says it is not hardy; his experience must have been with imported bulbs, which being generally too weak to flower, are probably more tender than the native ones, as

bulbs from California stood the past severe winter near New York, and this spring flowered vigorously. The Quamash will not please those who value a plant in proportion to its showiness, as it is rather modest in appearance, though a very neat and interesting plant. In some of the valleys of the far west the plant is so abundant, that the Indians resort to them at the proper season, and the tribe—at least the female portion of it, spends some time in collecting and preparing the roots. A hole is made in the ground and lined with stones, in which a fire is built; when the stones are heated, the fire is swept out and the bulbs placed in the hole, covered with branches, and then with earth. The cooked roots are then beaten into a paste and dried to use as food during the winter. The eastern Quamash, as we recollect it, is a somewhat showier plant than the western, though not quite so large, and we would advise those who live near where it grows to transfer the bulbs to their gardens.

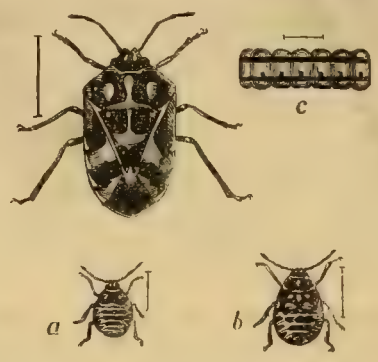
The Rocky Mountain Bramble.

When the expedition to the Rocky Mountains, commanded by Maj. Long, returned in 1821, the botanist, Dr. James, brought home dried specimens of a raspberry or bramble, of which the fruit, according to him, was "large and delicious." Dr. Torrey, finding that it was a new species, named it, upon the strength of Dr. James' notes, *Rubus deliciosus*, he not at that time knowing that every fruit met with by an explorer is, if not absolutely repulsive and uneatable, "delicious." Major Long himself greatly excited the fruit-growers of that day by his accounts of the excellence of a grape found on the same expedition, which was some years afterwards cultivated, and found to be no better than any other wild grape. The stories of explorers in regard to fruit must be accepted cautiously, as everything tastes good to a hungry man, who has lived for months on salt pork and "hard tack." In this case "Delicious Raspberry," as we may translate *Rubus deliciosus*, is a misnomer, as its fruit is not only not delicious, but only barely edible. There has long been a fine old specimen of this shrub on the rockery at the Botanic Garden at Harvard University, and when Prof. C. S. Sargent assumed the directorship of the garden, he was struck with the value of the species as an ornamental plant. It has a graceful habit, neat foliage, and in spring produces an abundance of pure white flowers upon the shoots of the preceding year. While the flowers are not very lasting, their great abundance, large size, and individual beauty, commend it to all lovers of flowering shrubs. The size and shape of the flowers and leaves are shown in the engraving, which is from a drawing by a lady, who would not care to have her skill as an artist publicly acknowledged. The shrub will probably flourish in any garden soil, but its natural habitat being rocky hill-sides, it is especially adapted to the rock garden. The seeds of the old plants at Cambridge have been saved, and sent to various gardens at home and abroad, though they do not seem to have grown very generally. Mr. Dawson, the propagator at the Arnold Arboretum, (Jamaica Plains,) has succeeded in raising two lots of seedlings, and we may expect to see the plant before long quite generally distributed.

Egyptian Beet.—A year or two ago impure seed was sent out, and there was much disappointment: this season we had the real thing, from both Peter Henderson & Co., and B. K. Bliss & Sons. No one has ever eaten beets in perfection, until he has tried the Egyptians. Take them young, not over two inches through, and they cook to balls of crimson jelly, dress them with Jersey butter, and enjoy beets glorified, nor let any profane good gifts, by suggesting, much less applying, vinegar. By sowing a short row every week, we have young tender beets all the season, and provide for a supply of beet greens, which, in the hot months, when spinach can not be had, are a most welcome substitute.

The Harlequin Cabbage Bug.

Cabbage growers in the northern states think they have to contend with a sufficient number of insect enemies, but those who live in southern latitudes, have one which in both beauty and destructiveness, far excels those of colder districts—the Harlequin Cabbage Bug. This insect first became prominently known about 10 years ago, from accounts that were sent of its destruction in Texas; whether it is gradually traveling northward, or has been of late more noticed than formerly, we can not say, but it is found in Kansas, and only a short time ago we received specimens from Virginia, from which the large figure, showing the bug much over twice its natural size, was made; the other figures, *a*, the larvæ, *b*, the pupa, and *c*, the eggs, being taken from our friend Riley's Fourth Report on the Insects of Missouri. Popularly any insect is called a bug, while entomologists restrict that name to insects of the sub-order, *Hemiptera*, which includes the chinch-squash-bed—and other well known bugs, and in this disagreeable company is found our really beautiful and sweet-scented Harlequin. The eggs shown at *c*, much magnified, are in rows of about half a dozen, and appear like light green, or white, minute barrels, with dark lines for hoops, and a spot for the bung-hole. When ready to hatch, the young Harlequin pushes the head out of its barrel, and steps forth as a larva, which grows to the size of the line by the side of *a*. In this state the color is greenish and black; in these the pupa, *b*, is active, and differs from the larva in having some orange color, and other changes. Finally comes the perfect insect, which, in order to show its beautiful markings, is much enlarged. The light spots in the engraving, are of a rich orange color, and the dark parts, blue-black, all handsomely polished. As our specimens came preserved in alcohol, we could not observe the pleasant odor it is said to give off—but this is the only agreeable quality the insect possesses; it not only exhausts the plant by sucking the juices, but appears to actually poison it; the late Dr. Lincecum wrote that half a dozen mature insects will kill a cabbage in a single day. It attacks other plants of the same family, such as radishes, turnips, etc., and is one of the worst pests of the southern gardens. No remedy other than hand-picking has yet been found, and domestic fowls and birds generally let them alone. Its systematic name is *Strachia histrionica*.



HARLEQUIN CABBAGE BUG.

A Sure Remedy for the Currant Worm.

The ravages of the currant worm were extensive last season, in many places taking every leaf, and blighting every bunch of fruit. Many, after fighting the enemy with their fingers, or with hellebore applied in powder for a few days, gave up in despair. We subdued three successive generations of these worms last season, and we give our experience for the benefit of the multitudes, who are suffering this summer. The worms made their appearance in May, attacking the gooseberries first, probably because they first showed their leaves. The gooseberries were stripped of every leaf before we noticed their depredations. We applied powdered hellebore from a dredging box soon after the worms showed themselves upon the currant bushes. This is effectual, but it takes a long time to go through a row of the bushes, even in an ordinary garden. With the most faithful application some worms will be likely to escape the poison, and provide for the next generation. By constant watching we kept the enemy under, and saved a portion of the crop. Later in the season we thought of applying the poison in a liquid form, and found it not a tithe of the labor and much more efficacious than the dry. We take about two ounces of the white hellebore for an ordinary ten quart water pail. Pour a quart or two of boiling water over the powder; after standing a few minutes, fill up with cold water and apply the liquid with a garden syringe. The large nozzle is much better than the rose for delivering the liquid. You can throw a stream of water twenty feet or more through the bushes with a good deal of force, and this will distribute the spray quite evenly over all the leaves. Every worm that is touched by the liquid dies, and drops from the leaves after a few hours. Ordinarily, a single thorough application will clean the bushes and save the crop of fruit. This spring the worms made their appearance, the stock having no doubt come from adjoining gardens, where nothing was done last year to destroy them. A single application of the liquid hellebore, (and mind it must be *white* and not black hellebore), costing about five cents, and the labor of fifteen minutes, completely cleaned the bushes, not a worm is visible, and a fine crop of fruit is promised. The currant is the best of all our acid fruits, easily raised, and much needed in its season in every home. It seems a pity to give over the bushes, which are found in almost every garden in the country, to the worms, when they can be so easily saved. A pound of white hellebore, costing about forty cents, will clean any ordinary garden, and keep it clean for a season. If applied in the liquid form with a good syringe, the whole labor need not exceed an hour. There is great satisfaction in seeing clean bushes and clean clusters, and though it may be an evidence of depravity, we confess to a feeling of consolation at the sight of the enemy, stupified, coiled up, and laid out in rows upon the brown earth. We always did have a private interpretation of Cowper's sentiment about "needlessly setting foot on a worm." *

The Injury to Plants by Forcing.

BY PETER HENDERSON.

In an article written for the *Agriculturist* some time ago, I referred to a disease which was very destructive among many of the older varieties of monthly carnations, or pinks, which we have been forcing for the last 20 years. I then suggested that the trouble was in consequence of this excessive forcing, which had so lessened the vitality of the plants, that disease followed whenever the conditions were slightly unfavorable, such as too wet or too dry a soil. Since then, our observations have shown that nearly all the varieties of roses in use for forcing for winter flowers are similarly affected. About the first of May this year I planted out in the open ground Safrano, Bon Silene, Douglass, Mareschal Niel, and four other varieties, which had been used for forcing during the winter. At the same time we planted out over 30 varieties of other tea-roses, that had been grown during winter in a

cold house without being forced. The plants of both lots were all seemingly in fine healthy condition, but about July 1st we find that the forced varieties have not only made a much weaker growth than the others, but probably twenty per cent died outright. In a conversation on this subject with Mr. Miller, the well-known florist and landscape gardener of Germantown, Pa., the other day, he cited the case of a nurseryman in England, who sent out the Dahlia, "Beauty of Hastings"; the first year it was exhibited from the seedling plant, it was found to be so entirely double, as to have what is known as a "hard center." It had been freely exhibited, and being the finest of its class at that time, orders for hundreds of plants were consequently received for it. To obtain the plants to fill the orders from the limited stock, it was forced in a temperature unusually high; other cuttings were taken from the cuttings already struck, so that a dozen roots were made to produce nearly 3,000 plants. When these plants came into flower, instead of producing the fine form and double variety that had been exhibited, nearly all produced single flowers. This brought a storm on the head of the unfortunate nurseryman, who was charged with sending out a spurious variety, and he had not only to refund the money which he had received for the plants, but was seriously injured in his business standing. That single flowers were produced in consequence of lessened vitality, was shown by the fact that these self-same roots produced in the succeeding year and afterwards double flowers like the original, and for many years the "Beauty of Hastings" was known as a standard sort. Again, we remember that in the day of the grape-vine fever, the "Delaware," and some other varieties, by being propagated in a high temperature and from the young shoots year after year, became so weakened as to hardly be recognized as the original variety. Plants of rhubarb, after they have been forced, are usually thrown away as useless, and the Lily of the Valley takes years to recuperate in the open ground after it has been once made to bloom in the hot-house. If we consider that this treatment of plants, natives of temperate latitudes, is in direct violation to their natural condition, we will not wonder that they rebel against the abuse. The carnations, roses, and grapes, are hardy, or nearly so, in northern latitudes, and their nature requires a rest of three or four months. Our forcing system, now so universally adopted to produce the flowers of the carnation and rose in winter, subjects them to a treatment similar to that proper for tropical plants; and this continued violation of their natural requirements of culture, results in the evils alluded to. I never like to refer to any disease or other trouble among plants, without being able to suggest a remedy. In the carnation we would advise that, instead of propagating them as usual from cuttings made in spring, from plants that have been forced all winter, the cuttings be taken at the time the plants are lifted in fall; after they are rooted, the young plants may be kept in a cold greenhouse or frame during winter. The same plan might be adopted with the roses forced in winter, if the plants are wanted for summer flowering in the open ground. I know it is not always convenient to do so, but when it is, I think it will be found a good method to maintain the vitality of the stock.

Retinispora Plumosa Aurea.

Let no one be deterred by the name, for that is the only one it has. The Retinisporas are not yet well enough known to have received a common name, and if we translate the name of the genus, it will be "resin-seed," which is not very elegant. The genus belongs to Japan, and includes some of the most beautiful of evergreens. This variety, *plumosa aurea*, is one of the most valuable plants of recent introduction, and one of the most tractable of all growing things. It may be kept 4 inches high as an edging, or it may be grown as a tree, and everywhere it has the same compact habit, with a lightness imparted by its abundant spray. Its golden color is charming, and what is most valuable, it holds it in the coldest weather, when most variegated conifers are dull, if not unsightly. This must become very popular, as it possesses every requisite to make it so. To be sure the nurserymen charge a dollar for a plant, but if one has a single specimen, it can be readily multiplied, as it roots as easily as any plant, provided sufficient time be given it. We put the cuttings in a box of sand in the fall, and keep them in a cool greenhouse all winter, and in spring set the box in a shaded frame. During the summer they will begin to grow, and be found to have formed roots; when this takes place, they must be potted in good soil. The free use of this forms one of the striking features in the fine grounds of Mr. Hunnewell, at Wellesley, and Prof. Sargent at Brookline, and it should be used elsewhere more freely than it is, as we do not know of a more lively, attractive little tree, especially for small places. There is a variety, *argentea*, in which the variegation is white or silvery, but it is not so marked and striking as the golden.

Onions Sown in Fall.

Last year we published an article by Peter Henderson in which he gave the experience of a Long Island market gardener who sowed his onions in autumn. We gave the plan a trial in our own garden last fall, but the sowing was not made until the very end of September, and the young plants did not all make sufficient growth to stand the very severe winter, even though they were well covered. Still the success, though only partial, was sufficient to show that this method is worthy of consideration, and from the amount that came to maturity on our bed this summer, have no doubt that it will answer wherever sets are used; but where onions can be raised directly from the seed, there will be no advantage from fall sowing except for such as are to be marketed green or very early. The idea is to sow the seed in the fall at such a time as will allow the plants to form a bulb large enough to stand the winter, and yet not so large as to run up to flower the next season; in fact, to raise onion sets, which instead of being harvested, are to be left in the ground, where they will be ready to grow as soon as spring opens. On Long Island the middle of September is found to be the best time to sow; further south it should be later, and north of that earlier. Success will largely depend upon the time of sowing, and this for any particular locality can only be ascertained by experiment. The covering should not be put on until cold weather has stopped the growth of the bulbs, and may be of leaves, straw, marsh hay, or other litter. Leaves applied while it is snowing will not blow about.

Cuttings in Summer.—Those who have never tried it, will be surprised at the ease with which a great number of flowering shrubs and other plants may be propagated, with the simplest apparatus. A frame of any convenient size, made of four 6-inch boards nailed together, and a screen to cover it, are required; this screen may be a piece of cotton cloth, tacked to a frame made of laths or other light strips; its object being to shade and to keep in the moisture. Set this propagating frame, where the soil is light and sandy, in a place where it will be shaded in the heat of the day, and put in cuttings made from half-ripened wood of all kinds of shrubs, cuttings of geraniums, and other things of which it is desirable to have small plants. Keep the earth within the frame moist, and raise an edge of the screen an inch or more during the hot part of the day. This is a rough way, but it will make many plants with little trouble. All shrubs will not take root from such cuttings, but many will.

Chrysanthemums.—These bloom so late that they are apt to be forgotten during the summer. The branches break off very readily, and should not be allowed to get too long. Caterpillars come at this season, and though few, are very destructive. —Hand pick them. If the black aphis appears, use tobacco water, applied freely with a syringe. Keep all choice kinds tied up to stakes.

About Strawberries.

The strawberry does not appear to have been found as yet, as cultivators are still trying, and new ones still come. Growers of new varieties seem to be working for two different ends. One class is striving for a berry that shall have all the good qualities of the Wilson and be a better fruit, while the other is working for large size and high quality. A few years ago we kept all the varieties of any reputation, and had a large show of vines with a miserable show of fruit. It was too much work to keep up such a collection, and as Doctor Hexamer, who is in the business, does this, we turned the whole lot under, setting out enough well tested sorts to give an abundance of fruit, and confining our experimental plants to such new varieties as we had not before grown. The soil, a very light and sandy one, was well manured, and in the spring of last year, ('74), rows, 180 feet long were set, one with "Charles Downing," one with "Seth Boyden," (No. 30), and one with "Kentucky." These were to supply berries, and well they did it, for we had more than we could afford the time to pick for use or to give away. A part of a row was set with "Black Defiance," to have a first-class berry to compare others with, and to give visitors a taste for once in their lives of a good strawberry. The unfortunate people who buy their fruit do not know what a strawberry is. We may remark that it is a great pity that "Black Defiance" doesn't carry better, but as an amateur berry on our soil, we do not know its equal. Other rows are set with trial varieties, and most of them have been a trial, some not giving more than a berry to a plant. All talk about strawberries must be with reference to particular soils. As an illustration of this, the Rev. E. P. Roe, author of "Play and Profit in my Garden," exhibited in our office windows several successive lots of the "Monarch of the West," which were immense as to size, and wonderful as to productiveness. This same "Monarch" behaved in so unkingly a manner on our grounds that he would have been deposed had we not seen Mr. Roe's berries, for it was quite inferior to either Charles Downing, Seth Boyden, or Kentucky, in size and every other quality. We shall try it another year. Then there was the "Champion," which from the grounds of the grower made such a sensation two years ago, a small, miserable thing with me, and to use a favorite expression of Solon Robinson, "Sour enough to make a pig squeal." The "Late Prolific," which does so well in some places, and Kinney's No 10, a great bearer at Worcester, make as fine vines as one would wish to see, but with me not worth garden room, and so with others of less note. Take it for all in all, if there is *for our soil* a better berry than "Charles Downing," we desire to make its acquaintance. We have had it ever since good Mr. Downer first sent it out, indeed before it was on sale, and for these six years or more, it has been the same fruitful, excellent berry, and to us on light land, what the Jucunda used to be to Mr. Knox on his heavy clay. The ladies like "Seth Boyden" better, as it is larger, and sweeter, but it does not hold out so well as "Charles Downing," and lacks in flavor. "Kentucky" has its good qualities; with us it is a few days later than the others, but nothing like ten, or even six days, as it is elsewhere. Its lack of color and indifferent flavor may perhaps be offset by its lateness and productiveness. Of the new berries that have been sent, one from Mr. E. W. Durand, Irvington, N. J., was simply astonishing as to size, and of an excellence rarely seen in large berries. We do not know if it has a name. A new variety called the "Crescent," is making a sensation about New Haven, Conn. It was raised by Mr. William Parmelee, and specimens sent us by H. H. Smith, arrived in fine condition, from which we infer that it will carry well. As it came to us it was a sprightly, juicy, but not high flavored fruit of good size and fine appearance. Its yield is represented as something wonderful, and we regret that we were unable to accept an invitation to see them in the field, the only place to judge properly. We evidently are not at the bottom of the strawberry busines yet.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Some Household Conveniences.

BY L. D. SNOOK, YATES CO., N. Y.

KNIFE CLEANER.—Housekeepers generally have no more facilities for scouring cutlery, than is afforded by a rag and pounded brick or sand-stone. While

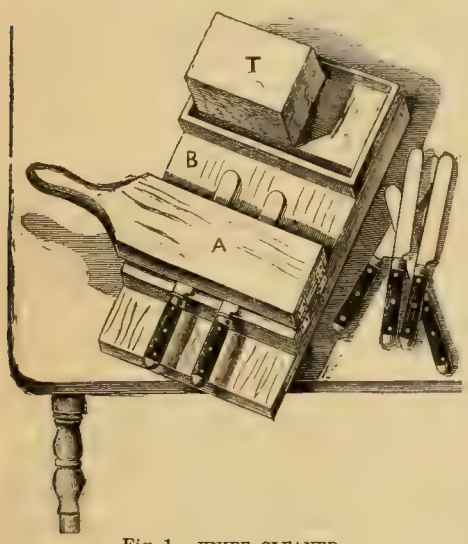


Fig. 1.—KNIFE CLEANER.

knives and forks can be cleaned in this way, there is an easier and cleaner method of doing it. A convenient home-made knife cleaner is shown in the engraving, fig. 1. *B* is an inch and a half board, 10 inches wide, and 18 long, with three inches of one end dressed down to half an inch in thickness. *A* is a lever 14 inches long, one inch thick, and four wide, with one end hinged to the side of the board, as shown in the engraving. *T* is a prepared scouring or Bath brick, such as is sold at the drug and grocery stores. To use the cleaner, fold the lever over backwards, and scrape about a teaspoonful of the brick upon the lever bed, place one or more knife blades on the powdered brick, and with the left hand press the lever firmly on them, moving the knives back and forth with the right hand. Use the polish either wet or dry. A piece of spongy leather may be nailed on the top and bottom of the lever, the upper piece to be used for polishing, after the knife has been scoured, washed, and wiped, and to be wiped lastly, with woolen or cotton flannel.

A FOLDING IRONING TABLE.—An ironing table should be abundantly long, and for the use of most persons, six inches higher than the common dining or kitchen table. The surface of many tables, when used for ironing, is sadly disfigured by the hot iron, which blisters and dissolves the varnish. A very cheap and extremely convenient ironing-table is shown in fig. 2; it is made by securing to the wainscoting, or directly to the wall, with hinges, the board, *B*, which is three and one-half feet wide, and five or six feet in length. The board is here shown folded down, entirely out of the way. The manner of folding and securing the legs, is seeen in fig. 3. One leg is hinged at each outer corner of the board, and when folded, one end of the clasp, *P*, is turned over them, as shown, keeping them from sagging, and always in place when the board is not in use. The table is easily secured to the wall of any room, and could be used in a well ventilated shed or summer kitchen in summer, and in the regular kitchen in winter.

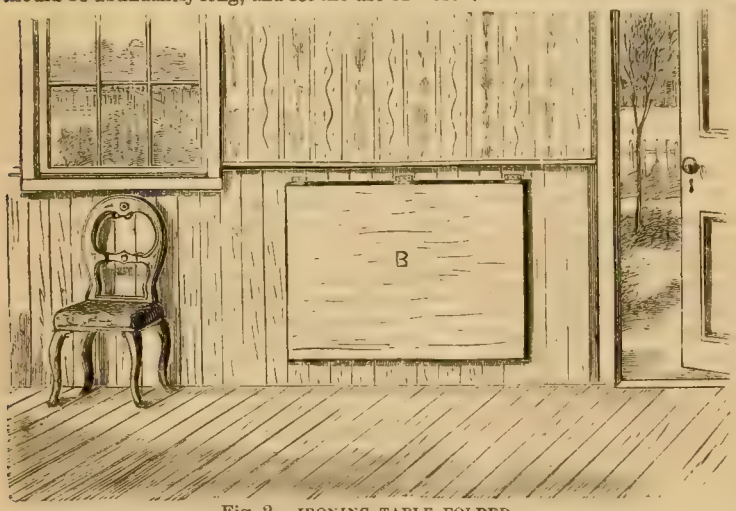


Fig. 2.—IRONING TABLE FOLDED.

Home Topics.

BY FAITH ROCHESTER.

Can Washing be Made Easy?

I read of wealthy people in foreign lands who think it a sign of poverty to wash oftener than twice a year, and then they devote a week or so to the job. Only two washings in a year would suit us pretty well, if they were only like our usual washing days; but since we can neither be comfortable nor healthy without clean clothes and frequent changes, we would not like to wait longer than one week for our soiled pieces to accumulate, for, even then most of us find the task of washing them a hard one.

"If you have one of the very best washing machines"—suggests the masculine sympathizer.

But I have my doubts—because, you see, none of the machines will wash clothes clean without soft water, and plenty of it.

"Use boiling-hot suds," they say, and that we cannot do when we use our own hands. But if a large washing is to be done with boiling-suds, somebody must put a good many pailfuls of water

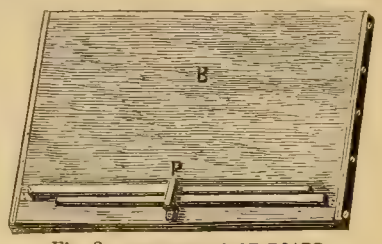


Fig. 3.—UNDERSIDE OF BOARD.

over the fire to heat; for washing-machine directions also bids us be careful not to put too many pieces into the machine-tub at one time—not more in quantity than two sheets. "A new broom sweeps clean," and the new washing-machine is often much praised, while the novelty of it makes the men folks take an interest in its use. The thing is often cumbersome, and when the washing is done by one hurried woman, she will sometimes bend her back over the old-fashioned wash-board sooner than get the machine out and put it away, and do all the lifting of water besides.

Plenty of soft-water, easily conveyed to and from our boilers and tubs—when everybody can have that—I think, with our machines, and soaps, and washing fluids, washing will not be a very difficult or a very disagreeable business One of the first necessities in house-building, it seems to me, is a large cistern for rain-water, unless the well-water is soft, or a spring supplies all the soft-water that is needed. The cistern-pump should be set high, upon a sink or otherwise, so that water could be pumped by means of a trough, into tubs setting upon a wash-bench. This might save some lifting, and if this trough would convey water from the pump to the boiler, in place over the fire, so much the better. In city houses, and in some country houses, the occupants may have the advantage of stationary tubs, which can be filled and emptied without any lifting, by means of water-pipes. If I should ever have to earn my living as a hired household servant, I should have the "impertinence" to inquire after the facilities for washing.

"Slighting" the Ironing.

"I never learned how to slight my work," said my very neat and nice neighbor.—"More's the pity," thought I, as I looked at her pale and sad face. I really think it is hardly more important to learn how to do work well than it is to learn how and when to slight one's work. We don't ask any one to do our washing less carefully. The clothes cannot be made too clean—though to be sure they might be all worn out by hard and indiscriminate rubbing on the wash-board. If we could have everything as we choose, we might say that our clothing cannot be ironed too smooth, any more than washed too clean; but clean it *must* be, for health's sake, whether it is smooth or not.

"It took me two hours to iron that pair of cassimere trousers," said my neighbor. I can see them still, though they are hundreds of miles away—that pair of gray cassimere trousers hanging freshly-ironed upon a chair. It is hardly exaggerating to say that they looked "as good as new," and not at all as most washed and ironed woolen trousers look. That was work which it paid to do carefully. Every seam had been nicely pressed open, then the whole had been ironed while it was damp, pressing it heavily and carefully on the wrong side, pulling it evenly into shape as the ironing went on. The woman who ironed those trousers can not bear to leave a wrinkle anywhere in anything she irons. She could not rest if every brown towel was not folded exactly even, and pressed quite smooth in every part, and her conscience would have condemned her if she had not turned every sheet all about, and pressed her hot iron over every inch of it. That is labor which does not pay, it seems to me. I have not enough of royal blood in me, and few of my acquaintances have, I fancy, to feel any discomfort from such semi-wrinkles as remain in the lower half of a sheet when it has been doubled and ironed so that only the upper half came in contact with the flat-iron. It is the same with my under-garments, and I would not thank any one for spending their precious time ironing the backs of night-dresses, etc. Not that I consider the fronts of any more importance than the backs, but as the garment is laid out upon the ironing-table, the front is naturally uppermost, and when that has been ironed, the whole body is smooth enough for comfort and for good looks.

Of this creed I am not in the least ashamed, though earlier in life I supposed that such ironing was only to be done secretly when in haste, and never to be told upon the house-tops. You see, my friends, we cannot—we who have souls as well as bodies—do all that we want to do each day and every day. We have to make constant choice between things of more or less importance. We want to keep our houses well, and we want to take good care of our children, and we want—oh! ever so many things that we can't have in these busy years, and we must go to bed when bed-time comes, for the sake of health and good-nature, and no votes of ours can put more hours into the day, or more days into the week.

When I give a hired girl instruction about the ironing, I tell her to iron very carefully all of the outside garments, not because they are better than the under-garments, but because wrinkles in these offend the eye. It certainly makes life more pleasant to have those clothes that meet the eye look as smooth as their texture naturally permits—to have them look as good as new. As for the under-garments, they are so ironed that as they hang upon the clothes-frames, or lie folded in the drawer, they look clean and smooth, and nobody finds any trouble in their use. If the children should say to

me, (as they never think of doing,) "mamma, you don't iron our clothes well enough now-a-days," it would not cause me one tithe the pain it gives me now to hear them say, "mamma, you hardly ever read us a story now, you are always so busy."

[The Dress Reform Corset-Waist and Skirt-Supporter.

This claims to be "a corset for those who cannot wear corsets." Like the waist of the "Emancipation Suit," it supports the bust without the use of bones or steels, and its waist form, and skirt attachment, make it a good skirt-supporter, relieving the hips, and making the shoulders do the burden-bearing. For those who prefer to have the time-honored chemise, or who have become attached to the use of a long-sleeved high-necked shirt, this corset-waist commends itself, but no one who has tried the emancipation suit, or the chemile, or the chemilette, or the chemlin, (or any kindred combination-garment,) is likely to forsake its simplicity and comfort for either low-necked waist or corset.

Keeping a Cow.

I may make some note of my dairy affairs, even if they are small compared with those of Ogden Farm. "Small business," you may say, when you learn that I have only half of the milk from one cow. But from that milk I feed my present family, (only myself and four children), with all the milk and cream and butter and cheese that we want, and really I am glad I have not more milk to take care of. After buying milk for two years, from two to three and a half quarts daily, it seems very good to have from seven to eight quarts per day almost for nothing. The man who milks the cow, while Mr. R. is absent, has half of the milk. I had some notions of my own, held rather vaguely until last spring, when some anxiety as to the treatment of my own cow and calf set me to reading upon the subject, and those ideas were confirmed then by my reading, and since by my experience. It seemed to me that if feeding a cow on corn had the effect to lessen the quantity of milk, *very coarse* corn-meal, (too coarse to get one quarter of it through a common sieve, but all the feed we had for a few weeks), would have the same effect, though in less degree. I found that when I mixed the cow's mess myself, scalding the meal with boiling water, and leaving it to soak a few hours before it was fed, the quantity of milk and cream was increased, and it was better still when the mess was half bran and half meal. Another notion which I cannot give up is about the time of milking. It seems to me that the hours should be regular, dividing the twenty-four hours somewhere near evenly. If a cow is milked before six in the morning, she should not be allowed to go unmilked long after six at night, and when a cow milked early in the morning, goes unmilked until after eight o'clock at night, night after night, I believe that she is injured as a milker in a way that she will not recover from, at least not until after next calving. Sometimes our former bossy, "Gentle," roaming in the woods and marshes for her food, would fail to come home at night, and when she was milked sometime next forenoon, the milk was much poorer than usual in quality, and the regular quantity was always decreased from that time, and again after each time of lying out all night. So when I see a cow stand lowing to be milked, and worrying to get to her calf, from the time of home-coming at about six o'clock, until a very industrious man cannot see to work any longer in the long days of June, I feel a good deal of pity for both cow and calf, and some pity for their owner, as I believe that such treatment injures the milk at the time, and lessens it for the future. If I am mistaken it would be more comfortable to know it.

At each milking I set away a part of my portion of the milk for butter-making, but I make scarcely a pound of butter each week. Of course this has to be "churned" as often as twice a week, and it might seem scarcely worth the trouble. But this amount of butter is quite sufficient for the children and myself in the summer, and the trouble of making it is small. I skim the pans carefully, mixing as little milk as possible with the cream, stirring each skimming thoroughly with the rest in the jar, so that the small mass of cream is always of even quality. I keep the cream as cool as I can (during warm weather), and when I go to churn it I have to spend but a few minutes before the butter comes. It is usually ready to work over in less than fifteen minutes, sometimes in five minutes. The churning is done in a quart bowl, with a tablespoon, and though the butter may not be "gilt-edged," it seems to us as good as we are able to buy in this vicinity. The buttermilk is carefully divided among three children, who like it better than any sweetmeats.

Probably more butter would be called for, if the fresh milk was less prized as food, and if bonny-clabber and Dutch-cheese had smaller attractions. My own supper is sometimes nothing, and sometimes simply a saucer of soft Dutch-cheese, made by draining the loppered milk for a few hours without heating or squeezing it, salting it a little, and mixing it with sweet cream. It is nutritious and palatable, and much more easily digested than pressed cheese or Dutch-cheese (or cottage) that is hard from having been heated before draining.

All this is not worth telling to dairymen, but there may be other women who might get milk and butter and cheese as I do, if they could get some one to do the milking "on shares."

A Cork Puller.

In former years we have mentioned the difficulty of putting old hoop-skirts to any useful pur-

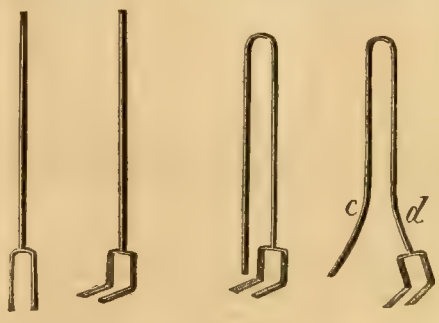


Fig. 1. CORK PULLERS. Fig. 2.

pose. Next to these as difficult to dispose of is an old umbrella. It seems as if there might be some use to which the combination of wires and sticks might be put after they had ceased to serve to ward off rain and sun, and we shall be glad to hear of any useful purposes an old umbrella may be made to serve—except that of a support for climbing plants, which we figured years ago. A correspondent, whose name we have mislaid, sends us a description of the manner of making a puller for extracting a cork from the interior of a bottle, from an umbrella wire. In fig. 1 is shown the end of an umbrella wire at the left-hand, and the manner in which the forked end should be bent is given at the right. Fig. 2 gives the whole wire, with the upper end bent down to make the thing complete. It is bent down as in the left-hand cut, and then spread as shown at the right-hand. The two legs are pressed together to go into the neck of the bottle, and when within they will spread far enough to catch the cork, which, by turning the bottle upside down, will be brought between *c* and *d*, and by pulling the whole out the two legs will be so compressed by the neck of the bottle as to hold the cork firmly and thus extract it with great ease.

Household Queries.

CHECKERS.—"R. L. B." To give the "scientific method" of playing this game, would require an illustrated treatise, for which we have not room.

PASTE FOR PAPER HANGING.—"G. H.," Dunn Co., Wis., asks for a recipe for paste that will hold. We have never found any trouble with good flour paste. The difficulty is probably with the wall, but as we are not told what kind of a wall has given trouble, it is difficult to advise. Glue size will generally remedy the worst cases; pour cold water over half a pound of glue, and let it soak 12 hours, or until thoroughly softened, then pour on enough boiling water to make a gallon. If the glue was properly soaked, it will dissolve at once; if any remains, heat until it dissolves. With this go over a new wall, or an old white-washed one that has been thoroughly swept with a stiff broom, and the paper will stick if the paste is good. Some use alum in the paste, to make it more adhesive. We have never found it necessary. Here is a recipe for paste with alum. Four lbs. of sifted flour, and two oz. of powdered alum, are to be mixed with *cold* water, to form a stiff batter with no lumps. Have ready a kettle of *boiling* water; let one stir rapidly, while another pours on the boiling water gradually. If this is properly done, the flour will be thoroughly cooked, and change color. This quantity of flour will make a common pail full. If found too thick when cold, thin with cold water, stirring thoroughly. Always use cold paste. It should be thin enough to work readily with the brush. Experience is the only guide. If paste has to stand for some time, cover the top with a layer of cold water, to prevent a hard skin from forming on the surface. If this does not meet the case, let us know.

AUTUMN LEAVES.—"Mrs. C. D. C." We will try not to forget your request about autumn leaves, but it would be rather early to talk about them now, even if we had room. We made some experiments with them last fall, and think we have hit upon a method of treating them, far superior to oiling, varnishing, or any other that has been published, and we shall be glad to have others know about it.

There are some questions which come to us that may be answered in many ways, and in such cases we like to call in the advice of our housekeeping friends, who will answer about

MINCE MEAT.—Here is a case which will appeal to every mother. A little girl who is only 12 years old is learning to cook, and she hopes that we will publish, "before Christmas," (bless her little heart), a recipe for a mince that will keep. Her mother's is a very nice mince, but does not keep well. Let us help her to one that will.

BLACK DYE.—One of our housekeepers wishes to know the best black dye, but she does not state whether for cotton, woolen, or silk stuffs.

Oat-Meal.

Probably the principal reason why oat-meal is so little used in this country, is the difficulty of procuring it outside of cities. There is not enough demand to warrant country mills in making it properly, or for country store keepers to keep it on hand. Even in cities it is difficult to always find it of the best quality. Indian-meal answers so many of the purposes of oat-meal, that our ancestors readily adopted it in place of the oat-meal they had known at home, and the use of which is mainly confined to those Europeans who will not give it up, and those Americans who have been advised to take it as an article of diet. In cities the best oat-meal is imported, and the large stores keep both Irish and Scotch. Oats do much better, and give a larger grain in England, than here, and in Scotland and Ireland they are better than in England. The imported meal is kiln-dried, and will keep a long time without spoiling. The oat, like Indian corn, requires long cooking in order to break the starch cells, and render it digestible; for this reason it is rarely made into bread and cakes, but is almost universally cooked with water, in the form called porridge in Scotland, and mush with us. To prepare it in the best manner, a "farina kettle," or an inner kettle set in an outer one containing water, is the most convenient; it can hardly be cooked too long. To those unaccustomed to it, the mush has at first a slightly bitter taste, but those who persevere soon become very fond of it. In the form of mush it may be eaten hot or cold, with butter and sugar, milk or cream and sugar, or in any of the ways in which other mush is eaten. It can not be recommended as a cheap substitute

for wheat or Indian corn, but it makes a pleasant change, and some invalids find it easier of digestion, and more nutritious than any preparation of either of these grains.

Eating Fruit.

We hardly know how to account for the popular impression that still prevails in many rural districts, that the free use of fruit is unfriendly to health. It has much to do with the scarcity of fruit gardens and orchards in the country. As a matter of fact, cities and villages are much better supplied with fruit the year round, than the surrounding country. There are hundreds of farms, even in the oldest parts of the land, where there is no orchard, and the only fruit is gathered from a few seedling apple trees grown in the fence-corners. The wants of cities are supplied not so much from the proper farming districts, as from a few men in their suburbs, who make a business of growing fruit for market. The farmers who raise a good variety of small fruits for the supply of their own families, are still the exception. The villager, with his quarter or half-acre lot, will have his patch of strawberries, his row of currants and raspberries, his grape vines and pear trees, and talk intelligently of the varieties of these fruits. His table is well supplied with these luxuries for at least half of the year. But there is a lamentable dearth of good fruit upon the farm from the want of conviction that it pays. It does pay in personal comfort and health, if in nothing else. The medical faculty will bear testimony to the good influence of ripe fruit upon the animal economy. They regulate the system better than anything else, and forestall many of the diseases to which we are liable in the summer and fall. A quaint old gentleman of our acquaintance often remarks, that apples are the only pills he takes. He takes these every day in the year, when they can be found in the market, and fills up the interval between the old and the new crop with other fruits. He has hardly seen a sick day in forty years, and pays no doctor's bill. We want more good fruit, especially upon our farms, and the habit of eating fruit at our meals. This is just one of the matters in which farmers' wives can exert an influence. Many a good man would set out fruit trees and bushes, if he were only reminded of it at the right time. One right time will be this autumn—at least in all but the very coldest parts of the country. A few dollars invested then will bring abundant returns in from one to five years. It is more intimately connected with good morals, than our philosophers think. With good digestion it is quite easy to fulfil the law of love.

BOYS & GIRLS' COLUMNS.

August.

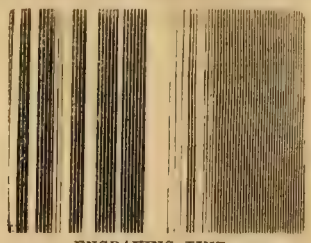
Whew! Here we are at the last month in summer! Already it is August, a name reminding us of another of those Cæsars you will read about when you study history. We told you that July was named after Julius Cæsar, so when Augustus Cæsar came to be consul, a month had to be named in his honor. The month had a very good name; the Romans called it *Sextilis*, as it was the sixth month of their year. In the old way of dividing up the months, every other month had 31 days, and the alternate ones had 30, besides February, which had 29, except in leap year, when it had 30. In this arrangement July had 31, and August 30 days, but Mr. Agustus Cæsar, no doubt a pompous and disagreeable old fellow, had no idea of playing second fiddle to Julius Cæsar. The month named after J. C. had 31 days, and why should the month named after him, A. C., have any less number of days? Augustus wouldn't stand it, he must have another day to that month of his, or he'd make "Rome howl," so to keep the old fellow quiet, they gave him another day to his month. And where do you think they took it from, from the months which had a plenty?—No, they just robbed poor little February, which was already the poorest of the months, of a day, just to please Augustus, and now February has to get along most of the time, with only 28 days. Isn't it strange that with all our modern learning, we depend for our divisions of the year, upon the whims of those old Romans? This month we have the end of the Dog Days. These are not, as many suppose, days in which dogs are apt to go mad, but because the dog-star (Sirius) and the sun used to rise at the same time during the hottest part of the year, on the Mediterranean, and the great heat was supposed to be due to the evil influence of the Dog-star. But now that astronomy is better understood, it is known that this star does not rise with the sun with any regularity, and has no influence whatever in making the days hot. Indeed it is not exactly settled when the dog-days are, but most almanacs put them down from July 24th to August 24th. But really the term dog-days has no very definite meaning, and there is no more reason for being afraid of dogs on those days, than in any other. If the idea that dogs are more liable to disease on those days, than at any other time, will lead people to look after the comfort of the animals, it will do no harm. See that dogs which must be kept tied up, have a cool place, a plenty of water, and a run whenever in is convenient.

When is a boat smaller than a bonnet?—When she is cap-sized, of course.

Rabbits.—"Herbert." Where young rabbits have all the green food they want, they are apt to eat too much of it, and this brings on disease. Old rabbits are not troubled in this way, and do not need so much care. Give more dry food, such as grain and clover-hay, and fewer cabbage leaves and other green stuff.

How Engravings are Made.

In June we told you, in answer to our Michigan boy Charles, and his sister, something about the way in which wood engravings were made, but somehow omitted to finish the story in the July number. If you look back to what was said in June, you will see that the untouched block prints black, where there are grooves cut in the block they will print white, and where there are a number of fine grooves close together the block will print a tint, and this tint will be lighter or darker as the spaces between the grooves are narrower or wider, and by a careful management of this the engraver can produce all the way from a very dark tint, almost solid black, to a very light gray that is nearly white. Now you want to know how the picture gets upon the block before the engraver begins to cut it; indeed, this was one of the things that Charlie and his sister were most troubled about. To make a block ready to be printed in these pages, requires the work of two, and sometimes three persons. We told you about the box-wood in June, and how it was prepared of the proper thickness and of any needed size by the box-wood worker, who makes one surface very smooth. Now let us take the first cut on page 300 of this number, which is a yoke for a bull. The editor who wrote the article makes with pencil on paper a sketch, showing what he wants; it may be a coarse sketch, but gives the idea, and he puts down the proportions. In this case the editor designs the picture. Then the draughtsman takes it, and picks out a block of the right size; if the block does not seem quite smooth enough, he rubs it with a flat piece of pumice stone and water until the surface suits him, and lets it dry. The box-wood is yellow, so he whitens the surface to make his drawing show plainer. There are several ways of doing this, one of them being to take a glazed card, such as business cards are printed on, and which have the surface thickly coated with white paint (white lead), he wets the card and rubs it on the block, and the paint rubs off of the card on to the block, and by a little care he can get the surface of the block nicely coated, so that when it is dry it is almost as white as a piece of paper. He then, with a very fine-pointed lead-pencil, draws the yoke of just the right size, making his lines just as they should be in the engraving. This goes to the engraver, who cuts away all the wood but the lines the artist or draughtsman has made, and when the engraving is printed, it will show on the pages in ink exactly what was drawn on the block in pencil. Here the engraver has only to follow the lines that were marked out for him. Now look at the upper right-hand cut on the same page (300)—the rear view of a chicken coop—you will see that a large portion of the coop is shaded, or covered with a tint, and if you will look closely, you will see that the shade or tint is all made with fine lines, just as is shown at the left-hand of fig. 3, last June—but as some of you may not have the paper at hand, we give it here again. Now, in drawing this block, the draughtsman did not draw all those lines, but he rubbed up some India-ink with water, and took a brush and painted that shade on the block just as dark as he thought it should be; so when it went to the engraver's hands, it had no lines for him to follow, but was just a "wash," as they call it. Here is where the engraver shows his skill, in knowing what lines to make, so that the block shall print that shade just as it was put on by the artist. It is not very difficult on a plain thing like this, but suppose it is a person's face, or an animal's body, where the shade is con-



ENGRAVING TINT.

stantly varying, here light, and there heavy, with only a wash which the engraver has, so to speak, to interpret by using lines. You will see from this, that to be a good wood engraver, one must be able to do something besides follow the lines that are drawn for him—that is a kind of mechanical work and is easily learned—but he has to be something of an artist; his engraving is all lines, and nothing but lines, that are finer or coarser, near together or far apart, and he must know just what kind of lines will make an engraving that will print exactly what the artist has washed on with a brush. The ability to do this makes all the difference between good and poor engravers. There is not space to tell you now how engravings are copied; that must wait until another time, but there is one thing that we must tell you about. The artist must recollect that his drawing will be *reversed* in printing, and if he were designing a label for tomato cans, and drew upon the block TOMATO, the engraver would follow the drawing, but when the label was printed, it would read OTAMOT—which would be rather puzzling. Even the best artists sometimes forget this, and we find, when it is too late, that a man is on the wrong side of his oxen, or a woman is milking the cow on the wrong side, and people write letters asking if that is the way we drive oxen, or milk, and make fun of it. It serves us right, too, for we, who have so much to do with engravings, ought to keep in mind the fact that everything is reversed in printing an engraving.

The Doctor's Talks.—About Click-Beetles and other Insects.

Some one sent me a beetle the other day, and wished to know what it was, and "all about it."—As it is an insect which is not very rare, (nor is it very common), I thought I would have its portrait taken, so that when you find one like it, you will know what it is.—"Oh yes, I shall know that beetle when I see it. I can tell it by its *big eyes*."—Some of you may say, and a great mistake you would make, though a very common one, as those large black spots do look very much like eyes. No, they are not eyes; just see where they are placed. An insect is no more likely to have eyes there, than you are to have them on your shoulder blades. Its eyes are in its head, and are those little roundish bunches you see just under where the horns or feelers join the head. The engraving shows the insect of the natural size, and you can see that it is one of the largest beetles in the northern states. It is black, with its wing-cases, the two hard shell-like covers that form the most of the back, marked with fine sunken lines or furrows, and sprinkled with white dots; the chest or thorax, the part where the "eye" spots are, is covered with a whitish mealy kind of powder, all except the spots themselves, which are very black and have a velvety look. If you should find one of these beetles, do not be afraid of it, as it is not able to harm any one. If you are afraid, you will not see one of the most interesting things about it. Place the insect on the table on its back; it may kick a little, but will not be able to turn itself over by the help of its legs. Watch it—"Click!"—and up it goes with a bounce, several inches from the table, and if it alights on its feet, it is all right, and can travel, but if it falls upon its back, it will presently try again, and keep on bouncing until it comes down right side up. It is a very sudden jerk that it makes, and what is curious, it has an arrangement expressly for making it. If you examine the under side, you will see at the bottom of the chest, a little blunt point, just between the first pair of legs, right behind this is a sort of sheath or cavity, in which the point rests. The insect bends back its head and chest, so as to unsheath the point, then suddenly straightens itself so that the point goes into the sheath, like the stroke of a little

CLICK BEETLE.

hammer, and with such force as to cause the bounce. From its striking such a blow, the beetle is in some parts of the country called the "Blacksmith," and those ignorant people who believe in signs and omens, say that if one of these "Blacksmiths" comes into a house, there will be a quarrel and the people in it come to blows. What nonsense to tell such stuff about an innocent insect. Its most common name is "Click" or "Spring-Beetle."—"Where does it come from?" you will perhaps want to ask, and it is a very proper question. Whenever you see a perfect insect, always try to find out what it formerly was. I think I told you once, and if I did, it will bear to be repeated, that there are four stages in the life of an insect. The egg, the larva, the pupa, and the perfect insect. In beetles and butterflies, and some others, the larva is very unlike the perfect insect; the larva of the beetle is a grub or maggot, some call them worms, and the larva of the butterfly is a caterpillar. In the grass-hopper, chinch-bug, and some others, the larva is much like the perfect insect, but smaller and without wings. So the grubs and caterpillars, when they are full grown, make cocoon or chrysalis, and become what is called the pupa, which is usually quiet and as if dead; some insects remain in this way all winter. The pupa of the grass-hopper, and some others, is quite as lively as the larva, and only to be told from it by those who examine very closely. These are the changes that you are to look for, and if people only knew so much as this about insects, they would be able to destroy the hurtful ones much better than they do.

A gentleman called on me some months ago with a great discovery. He had found out the cause of the cotton-worm, which destroys so much cotton in the southern states. He had some cotton-seed which had been put away for some years, and in it were many little beetles, or weevils. "There," said he, "that's the cause of all the trouble, these things turn into cotton-worms, and if you tell them to burn the cotton-seed, and not use it for manure, they will have no more cotton-worms."—I could not convince him that these were perfect insects, and could not turn into anything. I don't believe one of you would make such a mistake....Well, to get back to our beetle. Its grub is over two inches long when full grown; it is reddish-yellow, with a brown head; it usually lives in old apple trees, and feeds upon the wood. Perhaps you would like to know about the scientific name; there are several hundreds of these click beetles, and the genus to which they belong was named *Elater*, which is a Greek word for leaper, and this one, from its eye-like spots, was *Elater ocellatus*, but there are so many, that they have been divided up, and more recently this goes by the name of *Alaus ocellatus*....This insect talk is already too long, but I want to say a word about some other click-beetles. They are all much smaller than this, and often dark-brown, or sometimes black. Some of them fly into the house in the evening, to get at the light. You can tell them by their click, when held, or laid upon their backs. The grubs of some of these are among the most destructive insects of the farm or garden, and are called "wire-worms." Another thing which is not a true insect, but a sort of millipede, is often but very incorrectly called wire-worm; this has more legs than you would like to count, while the true wire-worm has only six legs near the head, and two little ones near the tail. The grubs live for several years in the ground, and do much mischief....The celebrated fire-fly of the West Indies, or *cucujo* (pronounced coo-coo-yo), is a close relative of our click-beetles, and somewhat larger than the one figured; it is dark-brown, and in place of the black eye-like spots, carries two bright lanterns. Yes, regular lanterns, with a light inside, a light like that you see in the fire-fly or lightning-bug, only many times stronger than any fire-fly you ever saw, and besides this there is a spot underneath the body that gives light. If one of these insects is held quite near the paper it gives light enough to allow you to read fine print. When I was a boy a friend brought me a lot of them in a box from Cuba; I kept them all summer, and had a grand time with them.—I can't now tell you more about them, except to mention two curious uses the West Indians make of them. They have a very narrow waist, so that a thread can be passed between the two halves of the body, and they may be tied or harnessed without injury. The women fasten them in this way into their hair, and upon their dresses, and thus make a brilliant display at night. The Indians, when they travel at night, tie a cucujo to each great toe, and thus are enabled to see where to tread.—So much for Click-beetles.

THE DOCTOR.

An Intelligent Cat.

A writer in an English magazine for little folks, tells some wonderful stories about his daughter's cat, "Topsy." We give you two of them, in the hope it will call out some cat stories from our boys and girls. "One afternoon Nelly, who is only three years old, being tired of playing with her doll, came to mamma to be nursed. Mamma took her upon her lap, with the doll in her arms. Presently Nelly went to sleep, and let the doll fall; when she woke up again, mamma looked down on the hearth-rug, and saw Topsy lying there nursing Nelly's doll. He had got one of his fore-paws behind dolly's head, and the other one round its waist, and was holding it just as he had seen Nelly do. Perhaps he knew that a doll was meant to be nursed, and as Nelly was not doing it, he had better try; at least it seemed like it, don't you think?

"You know we had some very cold weather just before Christmas. Well, one day when Topsy's cat's-meat was brought, it was frozen quite hard, and felt as cold as ice. Topsy took it up in his mouth, but put it down again directly. He shook his head, and said, 'Skiff! skiff! skiff!' and it was very clear he did not like it at all. What do you think he did then? He considered for a moment, and then took one of the pieces in his mouth and carried it over to the fire, he put it down on the hot fender for a minute, and then ate it up. When it was finished, he went for the second piece, and then for the third, both of which he warmed at the fire in the same manner. Wasn't that clever of him? I think you will not be surprised to hear that we are all very fond of our cat, and not a little proud of him, for all I have told you is true."

A Fortune Made by a Wooden Hat.

In the year 1826 a poor journeyman turner, named Muhle, in worn-out shoes, through which his bare toes projected, with a knapsack on his weary back, arrived at a little village not far from Colmar, in Alsace. In this village was an engine-factory, in which our workman had come to look for employment. But the poor fellow's ragged, miserable appearance did not tell in his favor, and the master of the factory at once sent him about his business. Our journeyman turned away, and sadly and despondently went out at the door. But he had scarcely placed his hat on his head, when from the office within he heard the voice of the master calling him back. He returned to the factory, and the proprietor asked him—"What, in the name of wonder, is that kind of hat which you wear?"—"It is my own, and turned out of wood!"—"What! a wooden hat? I must examine it a little closer. Where did you buy it?"—"I did not buy it, I made it myself."—"Indeed! how and where, then?"—"On the turning-lathe."—"But your hat is oval, and on the turning-lathe things are made round. Some one else must have done that for you, you could not have made that hat."—"Yes, it is as I say," replied the poor journeyman. "I turned that hat myself."—"And how have you made it? you must be a wonderfully clever fellow to make an oval hat on a turning-lathe."—"I moved the central point, and then turned as it suited me. As I have to walk long distances, and can not afford to buy an umbrella, I made a hat which would serve me instead."—The manufacturer was struck, for he saw that poor Muhle had by himself discovered a difficult problem in the art of turning, which in the mechanics of the present day has become of such great importance. He recognized the immense value of the discovery, and at once took the poor fellow into his employ. He soon found out that Muhle was not only a very clever workman and turner, but a real genius too, who only required further instruction and guidance. And so it turned out. Muhle entered the business, in due time he became a partner, and after the manufacturer's death he was sole proprietor. At his death he left a fortune of millions. His wooden hat had been the first cause, and his clever head the cause of his success.

Why is the Sea Salt?

Miss Lottie, (who, as many older folks do, forgot to say where she lives), asks the Doctor a question which he finds it rather difficult to answer. "Why is the sea salt?"—To tell the whole story about the sea so that boys and girls would understand it, would be a pretty hard matter, and it would take a book rather than an article in the Boys' and Girls' Columns. We should have to talk about salt deposits, and go back to the very childhood of the world as it were. You know that the water of the sea is salt, because you can taste it, but you do not know that the water that runs out of the earth, such as most spring and well water, is salt, because there is so very little in it that you do not taste it. If you place a very clean and bright saucer full of well water in a warm place, such as on the back of the stove, and wait until it has all dried away—evaporated, or gone off in vapor, is the better word—and the saucer is quite dry, you will see that it will not be bright as at first, but that the water left something there—a very little, but enough to make the saucer look dim. If the saucer, without washing it, be filled again, and again, until several saucerfuls have been evaporated, you can at least get enough of the matter that is left to taste, and you will find it tastes salt and bitter, showing that salt and some other things are in well and spring water. Chemists have a much surer way of showing this, but we will not talk about that now. Now instead of the sea, the great ocean, let us consider a smaller body of water, such as many lakes in the basins of the far west, the Great Salt Lake for instance, which is where it receives all the streams of a wide extent of country, but has no outlet. All the rain that falls for thousands of square miles, soaking into the earth comes out again in places as springs, or washing the surface runs down the mountain sides and forms streams, into which waters from the springs run, and finally get to the lowest point, the lake. When this water, no salter perhaps than your well water, reaches the lake, it can get out only as the water got out of your saucer by evaporation, but just as in your saucer, the salt and other matters that have been washed out of the earth, do not evaporate. This lake for ages and ages has been receiving water, but getting rid of it only by evaporation, and now there is in the lake water which is many times salter than that of the ocean. I have seen in the country south of Salt Lake, smaller lakes formed in the basin-like valleys where they get the water from all the mountains around, and in a dry season these would dry up, and the bed of the lake look like snow, the salt being left after the water had evaporated, sometimes so thick that it can be shoveled up, and this is the way people in that country get their salt. If the evaporation of water containing the merest trifle of salt can make a large lake like the Great Salt Lake, so very strong with salt, as to be almost like brine, we can see that a great deal of the saltness of the ocean may have been carried into it from the land, and that this is one of the reasons why the sea is salt.

Aunt Sue's Puzzle-Box.

ANAGRAMS OF FAMOUS BATTLES.

1. Storm or moan.
2. Ah! at morn.
3. Poles boast.
4. Once dull.
5. He'll rub kin.
6. I trust zeal.
7. Rifle soon.
8. No pews, C.

BUNN.

NUMERICAL ENIGMAS.

1. With seven letters spell a welcome word,
To youthful ears, by them most gladly heard,
"A word in season," this describes it well,
It almost shows the kernel through the shell;
My seventh, fifth and third, and sixth and fourth,
Soon calls a strong and mighty being forth;
My fourth and third and first and second name
What scholars like much less than pleasant game.
HENRY.

2. I am composed of 16 letters:
My 1, 2, 11, 10, is a wild animal; sometimes tamed.
My 6, 5, 15, 12, 2, is one of the United States.
My 14, 7, 8, 13, is a bond of union.
My 9, 7, 3, is a propeller.
My 4, 5, 6, is pleasant to eat but uncomfortable to get into.
My 1, 7, 16, is a receptacle.
My whole was a noted man who died in the year 1790.
GEO. H. FULLER.

PI.

Myoneco si het yesa arich fo dol ega.

SQUARE WORDS.

1.—1. A girl's name. 2. A prognostic. 3. To restrain. 4. A girl's name.

2.—1. A cape. 2. A state. 3. A cleft. 4. Observation.
H. J. K.

CROSS WORD.

My first is in Xenophon but not in king,
My next is in preach but not in sing,
My third is in milk but not in butter,
My fourth is in growl but not in mutter,
My fifth is in bawl but not in cry,
My sixth is in bind but not in tie,
My seventh is in white but not in black,
My eighth is in nail but not in tack,
My ninth is in copy but not in book,
My tenth is in sought but not in took.
My eleventh is in pity but not in love,
My twelfth is in hat but not in glove;
These letters if taken and placed right
A well-known city will bring to light.
CLAUDIA.

CHARADE.

My first in music finds a place,
A sign to all who play with grace,
That when their gaze upon it falls,
For repetition then it calls.

My second, one who tidings brought
To those who long a Saviour sought;
Tidings of joy and Christian peace
To sinners struggling for release.

Complete a man of world-wide fame,
Of noble rank and honored name,
A mighty prince, a statesman bold,
Whose mind vast plans of empire hold.
HENRY.

DECAPITATIONS.

1. Behead that which shines and pleases
And leave what often teases.
2. Behead a *gage d'amour*,
And leave what gave it power.
3. The little maiden wore it,
The cruel thing that tore it.
4. I'm harder, far, than slag,
I'm soft as any rag.

DOUBLE ACROSTIC.

The initials name a tropical plant, and the finals a garden flower.

1. A man's name. 2. A girl's name. 3. An animal. 4. A river of England. 5. A city of New York. 6. Subsoil.
ITALIAN BOY.

MORE FRIGHTENED THAN HURT.—*Drawn and Engraved for the American Agriculturist.*

HIDDEN GAMES.

1. Harry threw his top out of the window. 2. Here, Tom, run with these boot-jacks to Nesbit Hall's store. 3. If you want to see a Ruta-baga, tell Enos to bring you one. 4. I know it was George Delmar, bless the dear boy. 5. Good, good! O Min, O Essie and Kate, come quickly and see this. A. SAVINNE.

TRANSPOSED APHORISM.

Clem crams tomatoes far.

ANSWERS TO PUZZLES IN THE JUNE NUMBER.

ANAGRAMS.—1. Authorities. 2. Skirmishes. 3. Drawback. 4. Substratum. 5. Significance. 6. Brotherhood. 7. Aeronauts. 8. Importance. 9. Apprehension. 10. Departure.

CHARADE.—Orange. ("Or," the French for gold; "ange," angel.)

CONCEALED SQUARE WORD.—E V E N
V A N E
E N D S
N E S T

CROSS-WORD.—1. Napoleon. 2. Captain Paul Pennock.

NUMERICAL ENIGMA.—1. Alberta Clara Smith. 2. Denmark.

DOUBLE ACROSTIC.—E— e —L Evangeline.
V— ct —O Longfellow.
A—utum—N
N—amin—G
G— rle —F
E— yri —E
L— ega —L
I— nfido —L
N— cb —O
E— sche —W

AUTHORS.—1. Gore. 2. Juvenal (Juvenile). 3. Lever. 4. Smiles. 5. Motley. 6. Mill.

ALPHABETICAL ARITHMETIC.—107)943265(8815. (*Key:* Oh nice Park.

PUZZLE.—MIMIC.

PI.—Rewards and punishments are the basis of good government.

Send communications intended for Aunt Sue to Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.

Well, Miss, you were not brought up in the country, or you would not be so frightened at that poor thing. If you once get through the gate and reach the house in safety, we can guess what a story you will tell so soon as you can get breath.—"What is the matter, my child? You are all out of breath."—"Oh, mother! let us go home; such a horrid monster, and all loose too! Something like an elephant, but not *quite* so big, but just such thick legs and round back.—No, it didn't have any trunk, but its neck was, oh! so long, and such eyes.—I shall be afraid to go away from the house again. Do let us go home, there are no such awful creatures in the city."—Just then Cousin Charley called "Lucy, Lucy, look here. I've found one for you. I've been looking for one ever since you have been here, and here is a real prime one."—Lucy went down, and Charley, as he placed the "one" on the grass, was much astonished to hear a scream, and a cry of "Mother, here it is!" and to see Lucy rush for the house.—"Well now, if city girls don't beat all, that girl is afraid of a Box-turkle, as if that would ever hurt anybody. Come here, Lucy, it won't hurt you."—By this time, Lucy seeing her cousin handle the "monster," found it was nothing like as large as her fears had made it, and behaved more sensibly.—"There," said Charley, with pride, "did you over see a handsomer turkle than that. I found it just t'other side of the gate, and you shall have it all for your own to take home with you."—"Now, Charley, don't say 'turkle,' didn't I read in the geography that they were *turtles*, and people in Florida caught them when they came ashore from the sea, and sold them to make turtle. *not* '*turkle*' soup."—"Well, I know turkle isn't right, but all the boys say so and its hard to get out of the way of it, but you havn't read as much about turtles as I have, or you would know there were sea-turtles, (whoppers those are.) fresh-water turtles, (some of them are snappers, I tell you), and land-turtles. In some countries, away off, the land turtles get big enough to carry a man, but here they are only about as big as a pint bowl."—"But you called it a box-turtle just now."—"So I did, and that's what it is, just see on the under side, most turk—turtles, have this lower shell all in one piece, but this has got a hinge or jinte to it."—"Charley, joint, not '*jinte*.'"—"Now see this *joint* lets it shut up the shell; he has only to pull in head, tail, and legs, shut up shop, and there he is."—"It is very curious, but what should I do with it if I took it home?"—"Do? just nothing but let it run in the yard. Why Uncle George, who used to live in the city, had one in his yard years and years. It burrowed in the ground every fall, and came out every spring. Uncle said that he could always tell when it was going to rain by the way "Tudy" walked around and stretched out his neck. And the worms and things that Tudy ate, whew!"—"Tudy's a queer name for a turtle."—"Uncle is one of those men who have names for everything. He knows all the bugs and things by name—why, Lucy, do you know that even the grasses and weeds have got names—and such names—worse than Archipelago. He said this turtle was *Cistudo Virginica*, but this was too long for every-day use, and so they called him Tudy."—"What shall I feed it on?"—"Nothing, he'll feed himself in your back yard. I don't know how many years they live, but they have been found with the date cut on the shell—oh, ever so long ago."—"But maybe mother won't let me take it home."—Her mother came along just in time to hear this, and said: "Yes, my child, take it, because Charley has been so thoughtful as to catch it for you, and I hope it may live in our city yard for many years, to remind you of your foolish fright, and to teach you to always look at a thing before you run from it, and to remind you of the day when your silly fears made a harmless little turtle seem a terrible monster."

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☞ Be sure and read editorial in the COUNTRY GENTLEMAN of May 13th.

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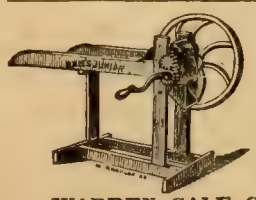

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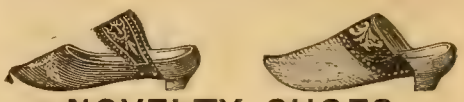

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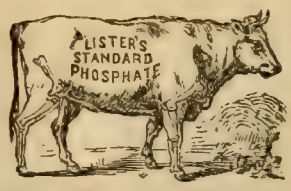

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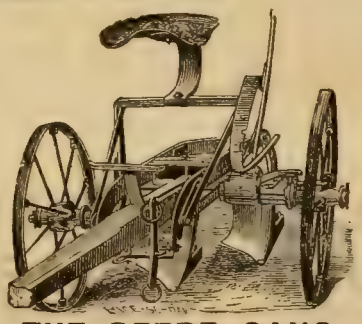

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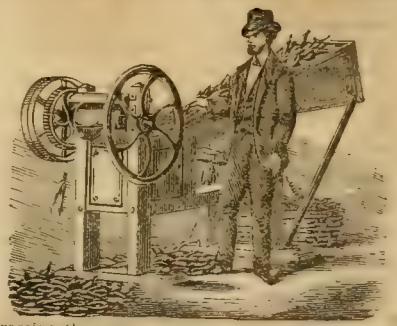

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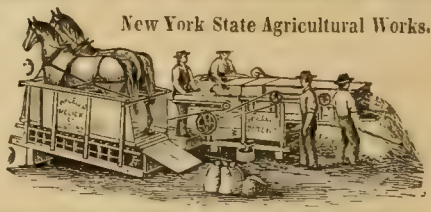

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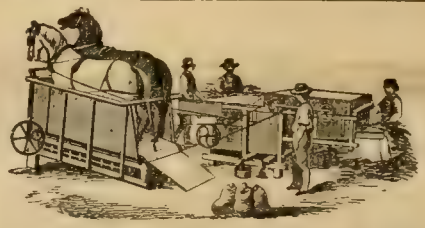
1854.  1875.

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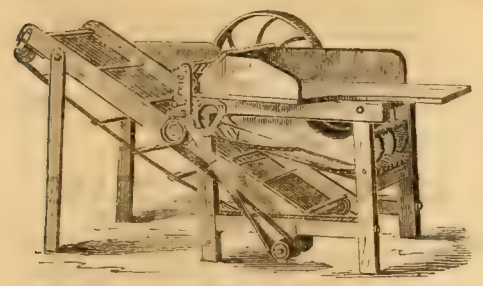

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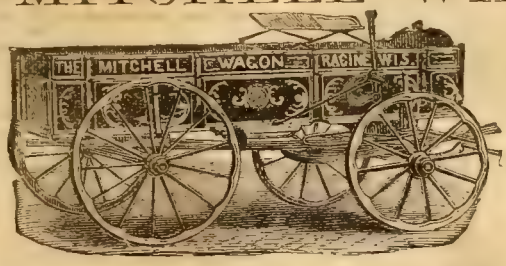

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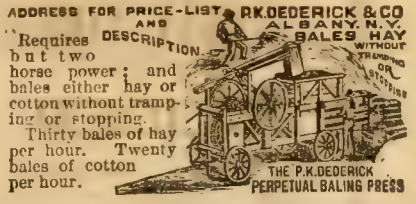

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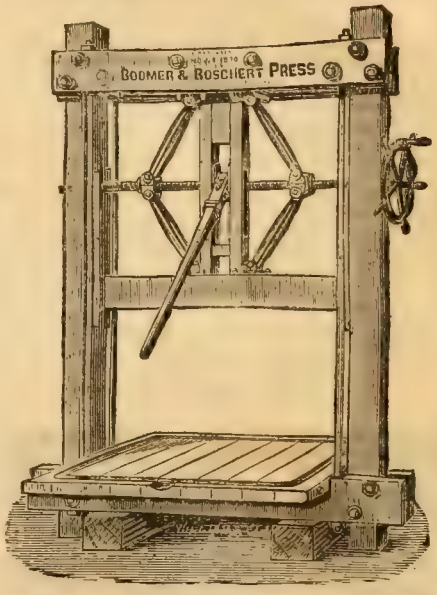

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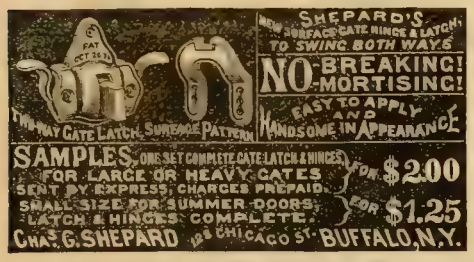

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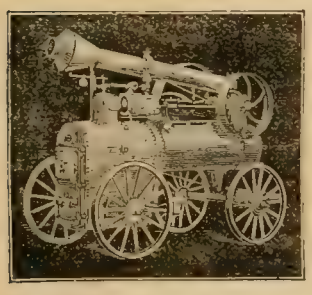

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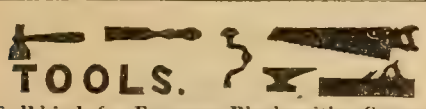

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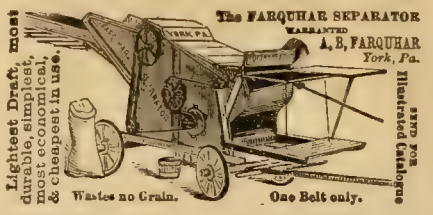

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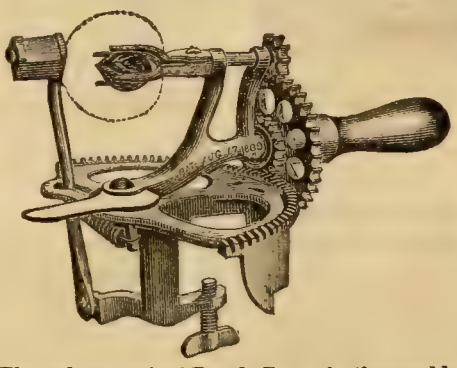

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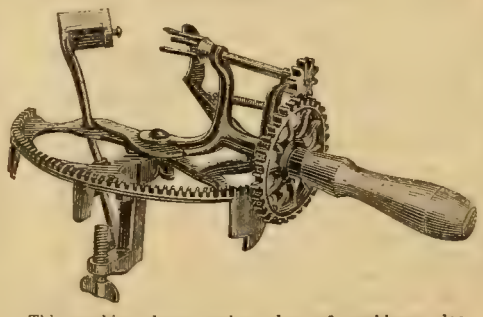

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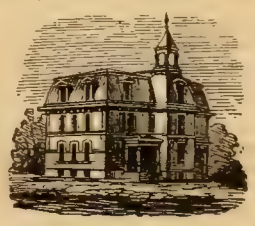

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 291.

Self-Opening Gate.—"M. M.," Chattahoochee, Fla. We do not know of any manufacturer of any automatic gate, nor do we know of any such gate that is of practical use; the difficulty of keeping them in working order being too much for the patience of the owners. A really serviceable gate of this kind would be very desirable.

Cahoon's Broadcast Sower.—"S. H. J.," Colfax Co., New Mexico. We cannot vouch for the truth of the representations made by the engravings of the Cahoon's Broadcast Sower, as to the vigorous and effective scattering of the seed, but we do know it to be a good machine for sowing seed broadcast, and that it does its work better and more quickly than hand sowing.

To Remove Mildew.—"Mrs. A. G.," Louisville, Ky. Chloride of lime water will remove mildew from cotton cloth or linen. A large teaspoonful of the fresh chloride is stirred into a quart of water and strained. The cloth is dipped in the solution, and laid in the sunlight for a few minutes; if this is not effective, the dipping should be repeated. This will not injure the cloth, if sufficiently weak, and the cloth is well rinsed in clear water, as soon as the spots are discharged.

Cement or Plank Floors.—"C. H. C., Owatonna, Minn. The relative cost of cement and plank floors are as follows. One barrel of cement, three barrels of sand, and seven barrels of coarse gravel or broken stone will lay 25 cubic feet of concrete, or 75 square feet of stable floor, four inches thick. At $4 per bbl. for the cement, the cost of cement alone would be $52 for a floor of about 1000 square feet, or for a stable of 40x25 feet. If plank can be procured for $16 a thousand feet, b. m., the same floor will cost for this material only $32. The labor of laying a cement floor is many times greater than that of laying a plank floor, and if it is not skillfully done, it will not last so long. You will doubtless choose the plank floor.

Plymouth Rocks.—"Enquirer," Detroit, Mich. Some varieties of Plymouth Rocks have the legs slightly feathered; this is not a sign of impurity of blood, but whether it is a disqualification for exhibition or not, we are unable to say. To breed out the leg feathers is probably a judicious course, so as to produce uniformity in the various strains. Chicks may be permanently marked by clipping off any one of the toe claws.

Megrims in Poultry.—"H. D. W.," Baltimore. When fowls are over-fed and have but little exercise, they sometimes become dull, sleepy, and stupid, staggering or moping about, or standing or sitting lazily with closed eyes. Water frequently drops from the mouth when thus affected. The cause is probably indigestion and inaction of the liver. The usual treatment is to give a tea-spoonful of castor oil daily, reduce the food, turn the fowls out and let them scratch, giving them morning and evening a few pills of bread and castile soap, with a pinch of cayenne pepper in each.

Home-Made Horse-Power.—"A. J. W.," Apsley, Ont. A substatial horse-power would need much iron work, the castings of which would cost more to make than the ready made machine could be purchased for. It would be better and cheaper to buy a good railroad horse-power than to attempt to make one.

Cattle at the International.—The Centennial Commission proposes to adopt a scale to regulate the respective numbers of each breed of neat or horned cattle to be entered for competition. It is assumed that seven hundred (700) head will cover all desirable entries; and upon that basis will be calculated the number of stalls which will be apportioned each breed. The scale divides the aggregate number into ten parts, and of these, four-tenths ($^4/_{10}$) are assigned to Short-horns, two-tenths ($^2/_{10}$) to Channel Islands, one-tenth ($^1/_{10}$) to Devons, one-tenth ($^1/_{10}$) to Holsteins, one-tenth ($^1/_{10}$) to Ayrshires, and one-tenth ($^1/_{10}$) to animals of other pure breeds. The exhibition in each breed will comprehend animals of various ages, as well as of both sexes. Draft and fat cattle will be admitted irrespective of breed. The exhibition of horned cattle will open September 20th, 1876, and continue fifteen days. It is desirable that all

persons who contemplate exhibiting, will make application for stalls without delay, and if necessary at a later day, such applications can be amended. Inquiries may be addressed to the Chief of the Bureau of Agriculture, International Exhibition, Philadelphia.

"Walks and Talks" Correspondence.

PASTURING PIGS.—"G. C.," Va., asks: "Do you give your pigs the run of a pasture, or do you keep them penned all the time?"—I give my breeding stock as much exercise as possible, winter and summer. In the summer all the breeding stock over nine months or a year old, have nothing but pasture and water. In warm weather they remain in the field night day. I kept forty breeding sows last summer and i summer before in an old pasture which has not been plowed for eight years. There is a little white clover in it, but the pasture consists principally of the common grasses. There are a few acres of woodland attached to it, and a living spring of water. These sows had nothing but this pasture for four or five months. If any of the sows get very thin from suckling, or from any other cause, we let them run with the younger pigs. These are in a better pasture, and fed twice a day besides.

"DO YOU RING THE PIGS?"—Yes. But if I had pasture that I was going to plow, I would let them root all they wished, and have a good time generally.

OATS AND PEAS.—"When labor is scarce and land cheap, would it not be a good plan," asks G. C., "to sow oats and peas together in May, and turn the hogs in when ripe"?—I think not. I cut this crop with a Johnston reaper, and the straw alone, if it is a luxuriant crop, well cured, is worth two or three times the cost of harvesting and thrashing.

DIEHL WHEAT. "N. P. T." sowed half a bushel of Diehl wheat on 64 rods of land in the fall of 1873. "I got," he says, "13 bushe and 37¼ lbs. of splendid wheat."—This 34 bushels per acre. He sowed six acres of it this fall. In this section many of our farmers have abandoned the Diehl and gone into Clawson. There seems to be no reason to doubt but that the Clawson is a hardier variety, that will yield better under ordinary treatment than the Diehl. But I still hold on to the Diehl, thinking it of better quality.

SOWING TIMOTHY WITH MILLET.—"E. A. W.," Orland, Ind., writes: "Do you think it will do to sow timothy seed in the spring with millet. My clover froze out and the land has been cropped enough—too much—and I thought to sow millet and seed with timothy, pasturing the millet."—I have had no experience on this point. I should think the pasturing would injure the young timothy. If the land is a strong loam, I should be inclined to try summer-fallowing it and seeding it down heavily with timothy, say half a bushel per acre, in August or September. If you get the land in fine tilth, you will be likely to secure a good catch and obtain a large crop of hay the next season, and a fair meadow or pasture for years to come. If the land was sandy and clean, I would sow timothy and clover alone this spring, and as early as the land could be got in fair mellow condition. Sow a peck of timothy and a peck of red clover and two lbs. of white clover per acre. Go over the land two or three times with a fine harrow before sowing the seed. Then sow the seed, harrow lightly and roll. Everything will depend on getting the land in good order.

MANGEL WURZEL AT THE SOUTH.—"T. K.," Winona, Miss., writes: 1. "Do you think mangel wurzel will succeed here in the south?"—I should think you could grow a large crop, but probably not of the best quality, and the advantage of raising mangels in the south cannot be so great as here, where they are specially valuable in spring before grass starts. 2. "Give me your method of planting, cultivating, and saving the crop."—Plow in the fall, manure heavily in winter or spring with well-rotted manure. Harrow it repeatedly, so as to mix the manure with the soil. Plow the manure under. Harrow. In a week or two, if there is time, plow again, harrow, and roll. Drill in the seed at the rate of 6 or 8 lbs. per acre, in rows 2½ feet apart. Thin the plants to 12 or 15 inches in the row. Cultivate between the rows with a hand hoe, repeatedly. Go over the crop again with the hoe. Leave only one plant in a place and keep out all weeds. I sow in May, and harvest in October. Pit in the field, or put the roots in a cellar. You would probably not need to sow before July, and harvest just before severe frost. 3. "Which root do you think preferable for cows when milk is the object?"—Taking into consideration the cost of raising the amount of produce, and the care of keeping, I think there is no root equal to the mangel wurzel—certainly none superior. 4. "What would be a fair yield per acre on land that will produce 40 bushels of shelled corn per acre?"—They never ought to be sown on land which is not rich enough to produce 75 bushels of shelled corn per acre. I think land that is rich enough to grow 75 bushels of shelled corn, ought to produce 750 bushels of mangels per acre.

A GOOD CORN CROP.—F. K. Adams, Waukesha Co., Neb., writes me that his corn last year yielded 92¼ bushels per acre on 20 acres, and all hard. I suppose this means shelled corn or its equivalent. If so, it is a grand crop. Mr. A. cultivates his corn very thoroughly—doing it with a two-horse "Black Hawk" Cultivator, made at Rock Island, Ill. He recommends me to get one.

CANADA BARLEY.—"J. A. C." asks why Canada barley commands a higher price than N. Y. State barley. Because Canada farmers take more pains with the crop, and have secured a good reputation for their barley. We can raise just as good barley on the east side of the Niagara or St. Lawrence river as on the west side. There is little or no difference in soil or climate. We can raise good barley if we make our land clean, mellow, dry, and rich. It is vain to hope for a good crop on poor, half-worked, weedy, wet land. It requires the best of soil and culture.

HOW TO USE A ROLLER.—If it is a plank roller, saturate the planks with petroleum. It will not only preserve it, but the damp earth will not stick to it. Put a seat on to the roller, and let the boy ride. Let him go around the field, and keep going around, working towards the center. He will not only do more work, but do it better, as there is no danger of scraping up the soil, as is sometimes the case when you turn short at the ends. Keep the axles of the roller well oiled.

RANDALL'S GRAIN SEPARATOR, made at Auburn, N. Y., touches me on a weak spot. I have been accused of having "weeds on the brain." And there is some truth in the accusation. Weeds run away with half our profits. We are improving in our treatment of weeds, but we are still very remiss in one particular. We do not always sow clean seed. We summer-fallow a piece of land for wheat, and take pains to get every weed seed to germinate, and then kill the young weed plants. But we are not always able to get clean seed to sow upon it. On our own farm we often run our seed three or four times through a fanning mill, in hopes of blowing out every foul seed, and all of the lightest grain. But from a slight examination of Randall's Separator, we deem that with this machine the work can not only be done with far less time and labor, but we may be sure of getting nothing but the heaviest and best matured kernels for seed, with not a single weed seed in the sample. After harvest we shall probably have a better opportunity of testing this machine, but in the meantime we are sufficiently satisfied of its good merits, to recommend it to the consideration of our readers.

BUYING A FARM.—"F. H.," of Mass., writes: "If you were to purchase a farm again, where would you advise a person to go to buy, and how old had he ought to be before buying, and how many acres would you buy?"—This is somewhat mixed, but the meaning is clear. If I had to buy a farm again, I should certainly buy it in the United States—but what part of it would depend on circumstances. I should probably buy in the neighborhood where I happened to be. I have very little respect for people who are always longing to be anywhere, except where their lot and work is cast. I would advise "F. H." to buy a farm in Massachusetts. If he was in Iowa, I would advise him to buy one in Iowa. If he was in Missouri, I think he would be wise to stay there. In regard to age, much depends on experience. I was born on a farm, and my father taught me to do all kinds of farm-work, as soon as I was able. I think I could plow as well as I can now, when I was twelve years old. At sixteen I had a good deal to do with the general superintendence of the farm. At twenty-two I was left alone. Twenty-five years later I could see where I had made a great many mistakes, and could feel the force of a remark once made to me by an old friend. "The truth is," said he, "a man wants to live one life, before he knows how to live."—If "F. H." is a farmer's son, and thinks he knows how to manage a farm, and has the money to buy one, let him purchase in the neighborhood, and go to work with a good heart. "How many acres" he had better buy, will depend on his capital. I would not lock it all up in land. Leave enough to work it and stock it properly. Recollect that we do not make our money from *land*, but from the labor, skill, and money we put into it. Land gives us a chance or opportunity to work; and we get our money from the work. As to whether you had better spend the work on 5, 50, or 500 acres, depends on circumstances. If your farm is small, you must grow crops which require much labor and manure per acre.

BREEDING LONG-WOOL SHEEP.—"R. S. T.," who says he has never kept sheep, asks me several questions about long-wool sheep and their grades. I am not sure but he is quite as likely to succeed with them, as a farmer who has hitherto kept only Merinos. I have known many farmers who used to keep a flock of common Merinos, and let them pick up a living as best they could, fail entirely when they undertook to raise the long-wool mutton breeds. They made nothing by keeping Merinos, and they made still less by keeping long-wools. But to the questions.—1st. At what age should they be allowed to breed?"—As a rule, not until they are two years old. I have bred them at one year old with good success. For instance, a ewe-lamb that is born in February might be allowed to take the ram the following December.—2nd. "How old should the ewes be kept as breeders?"—In an ordinary flock I should not keep them after they were four or five years old. It is better to sell them to the butcher when fat, and breed from young ones. In raising choice, pure-bred sheep, breeders often keep good ewes as long as they will breed. I have a Mapleshade Cotswold ewe, "No. 70," 8 years old, that had three good lambs this spring, all now living and doing well. She is still in vigorous health, and weighed at shearing time this spring 178 lbs., and sheared 10½ lbs. of wool.—3rd. "Would you have the lambs come early when the object is *not* to raise lambs for the butcher?"—If you have plenty of roots for the ewes, or can "slop" them with bran or malt-combs, and have dry, comfortable quarters, I should decidedly prefer to have the lambs come early, say February and March. You have then plenty of time to attend to them, and the fresh May and June pasture will keep up the flow of milk, and push forward the lambs.

SAWDUST FOR MANURE.—"G. W. C.," Illinois, asks if it "will pay to haul rotted sawdust five miles for manure?"—I should think not on your rich prairie soils. You can get or make manure cheaper.

NUTRIMENT IN PUMPKINS.—"J. C. C.," Huntington, Ind., writes: "I have several times fattened pigs on sweet pumpkins and corn. I threw out pumpkins and corn together. The pigs would eat all the corn they wanted, and would then eat twice the amount in bulk of pumpkins. They grew and fattened much better than when I fed corn alone. Now, do you suppose there is much nutriment in the pumpkins, or was the good effect due to the pumpkins keeping the stomach and intestines properly filled?"—Anything which will enable a good pig to eat and digest more food will induce a more rapid growth. In 100 lbs. of pumpkins there is 82½ lbs. of water. Green clover contains 75 per cent of water. If you were feeding 25 large hogs, and they ate 200 lbs. of corn-meal a day; and if you should mix water with it until it was as "sloppy" as green clover, you would have to make a mixture of 200 lbs. of corn-meal and 600 lbs. of water. Now if, instead of giving water, you give pumpkins, to get the same amount of food and water, you would have to give 700 lbs. of pumpkins and 147½ lbs. of corn-meal. It must not surprise any one, therefore, to see a lot of pigs, which had just had all the corn they would eat, make away with a good sized pumpkin each after every meal. The pumpkins furnish water and afford a little easily digested food. And when the pigs have all the corn they will eat, and all the pumpkins they will eat afterwards, I can easily see why they should grow and fatten faster than on corn and water alone.

"HOW OFTEN SHOULD PIGS BE FED?"—Young pigs could be fed five or six times a day to advantage—say the first thing in the morning; then as soon as you have done milking. As soon as you come home at noon feed again, and again before going to the lot in the afternoon. Then again when you come home to tea, and finally the last thing at night. The pen of five pigs under six months that I showed at the N. Y. State Fair last year were fed in this way. They were fed little at a time and often. They had a little corn-meal and fine middlings mixed with, and allowed to soak for several hours in, milk and slops from the house. The food was not cooked. The pigs were always ready to eat—never quite satisfied and never really hungry. They would always come running to the trough and eat up clean all that was given them.

SALT AS MANURE.—A Pennsylvania farmer wants to know if it will pay him to use salt at $1 50 to $2.00 per barrel for manure, and how he had better use it.—I have not much faith in salt, and yet it sometimes has a wonderful effect. For wheat sow a barrel per acre *broadcast*, and harrow it in thoroughly before drilling in the seed. Never drill in the salt with the seed. Several of my neighbors killed their seed corn this year by putting refuse Syracuse salt in the drills or hills.

STONE UNDERDRAINS.—"G. W. W.," Bedford Co., Pa., has plenty of stones on his farm, but cannot get tiles.—Use the stones for drains. Put stones on each side of the drain, and cover with a flat stone. If well laid, they will work well and last for many years. You cannot make a good *main* drain by throwing in stones or gravel promiscuously. With me an underdrain of this kind has never worked satisfactorily.

CROSSING COTSWOLDS WITH SOUTH DOWNS.—A gentleman in Pennsylvania has a pure bred South Down ram, and he proposes to buy some pure bred Cotswold ewes to breed to him.—My advice is "don't."—Better get good common grade ewes, that will not cost one-tenth what a pure bred Cotswold ought to be worth. Breed these to your pure bred South Down, and you will have nearly as good lambs as if you crossed him with pure bred Cots-

wolds. Do not buy Duchess Short-horn cows at $5,000 to $40,000 each to cross with a Devon bull. You will not get money enough from the milk, or calves, or beef, to make the operation profitable.

Garget or Inflammation of the Udder.—"C. E. G.," Pendleton, Ind. When the udder and teats of a cow, that has recently dropped a calf, are swollen, feverish, and lumpy in places, she has what is called the garget. The whole mass of the udder is affected more or less, and some of the milk channels become filled with coagulated milk, and sometimes pus. The inflammation should be reduced by cold water applications, and a dose of one pound of epsom salts, repeated in two days, if necessary. The milk should be drawn frequently, and if the teats are too tender to be handled, a milk-tube should be used. If the swollen and hard condition of the udder continues, it may be rubbed with iodine ointment twice a day, a good deal of gentle friction and pressing of the udder being used.

Death of Lexington.—This noted horse, the sire of a greater number of valuable horses than any other stallion in this country, is dead. He died at Woodburn Farm, Ky., at the age of more than 25 years. He was foaled in 1850, made and won his first race at Lexington, Ky., in 1853, and out of the seven starts which he made in his racing career, he was beaten but once. Since 1855 he has been reserved for the stud, first standing at the farm of W. F. Harper for two seasons, when he was sold by his owner, Mr. Ten Broeck, to R. A. Alexander, of Woodburn, for $15,000. He has stood at Woodburn since that time. Amongst his most noted progeny are Kentucky, Asteroid, Idlewild, Norfolk, Leatherlungs, Thunder, Arcola, Harry of the West, Daniel Boone, Jack Malone, Harry Bassett, Tom Bowling, Preakness, Joe Daniels, and Wanderer. No other horse in the world has left such a valuable offspring behind him, and it is somewhat remarkable that in his later years he sired the best of his sons. For some years he has been blind, but has rarely transmitted this defect to his colts.

Berkshire Swine Association.—The American Berkshire Swine Association has issued a circular, in which it is announced that pedigrees for entry in the first volume of the Record should be in the hands of the Secretary on the 1st of August, and that the volume is expected to be issued before the end of the year. A premium of $100 is also offered for the best approved essay upon the History, Breeding, and Management of Berkshire Swine; competing essays to be placed in the hands of the Secretary by September 1st, 1875. The awarding committee are Prof. J. K. Klippart, Columbus, Ohio, John P. Reynolds, Chicago, Ill., and Luther Tucker, Albany, N. Y. The address of the Secretary of the association is A. M. Garland, Springfield, Ill.

Protrusion of the Rectum in Fowls.—"E. R. H." This is caused by using too stimulating food, which relaxes the muscles, so that the lower part of the rectum is ejected along with the egg, as it passes through it from the oviduct. As hens subjected to this trouble are generally fat, it is best to promote them to the kitchen. We have found it always to return, notwithstanding all our treatment, which has consisted of injecting solutions of opium, using astringent washes, and giving one drop of tincture of aconite in a bread pill, each day for a week.

Value of a Cord of Muck.—"E. H. M." The value of a cord of muck is as undefinable as the value of a horse. It depends upon its quality. Some muck is wholly vegetable matter, and some has 40 to 50 per cent of sand in it. The vegetable matter, when fresh, contains 70 to 80 per cent of water, and when dry is of course increased in value. A cord of freshly dug muck, consisting wholly of vegetable matter, well decomposed, and that leaves only 2 to 3 per cent of ash when burned, may be worth a dollar a cord. When dug a year, it may be worth twice or thrice that sum. Generally we should estimate it at one-fourth the value of fresh stable manure.

Guaranty of Eggs.—"R. J. W." As we understand it, a poultry dealer who sells eggs and "guarantees" them, engages that they shall be the produce of pure bred fowls, fresh, in good condition, and properly fertilized; and all this he can by taking proper care to assure himself of. More than this no one can do, and if he does less, he is not an honest dealer. Occasionally with the best care, there may be eggs that will not hatch, and some loss in this respect must be expected.

A Case of Injudicious Feeding.—"N. F. M.," Glenwood, Va. "A horse ten years old, apparently in robust health, was fed upon corn-meal mixed with water, without hay or other fodder, for three days in warm weather, being worked during the time at heavy hauling. The third day, while still at work, the horse sickened and died in half an hour. What was the cause of death?"—It is impossible to answer this question satisfactorily, without knowing the previous condition of the horse's health, or making an examination. The feeding was decidedly wrong and dangerous, and would undoubtedly have led to trouble sooner or later. It is probable that death was caused by the injudicious feeding; such improper feeding being sufficient to produce disease and death under the circumstances.

Sheep for Kansas.—"G. E. W.," Marion Co., Kansas. The most profitable kind of sheep for your locality, would undoubtedly be the common native ewes, which can be purchased for $2.50 a head, and to cross them with pure Merino rams. These would give in three years a three-quarter bred wool, which is in demand at every woolen factory in the country. Long wool sheep and their grades are not suitable where small flocks are kept, and where mutton is not the main object. This class of wool can not be used in ordinary mills, but only for fabrics of combed and not carded wool, and it is often difficult to sell the wool for a fair price, unless in quantities large enough to ship to eastern markets.

Government Land.—"W. E. S.," New York. For information about United States land in any part of the country, write to the Commissioner of Public Lands, Washington, D. C.

Wild Garlic.—"C. J.," Rockbridge Co., Va. There is no surer method of destroying wild onion or garlic than summer-fallowing. This plant is very tenacious of life, and as the ground is repeatedly plowed or harrowed, the roots, which are brought to the surface, should be gathered and burned. One of the most frequent causes of the spread of this weed is the sowing of wheat which is mixed with it; another is using screenings from grist-mills or fanning-mills for poultry feed. If clean seed only be sown, and all the screenings be ground before they are used, there would be much less garlic grown. It is useless to kill it by summer-fallows, if the ground is re-sown with foul seed, or through the use of foul manure.

A Breachy Colt.—"J. E. N.," Pike Co., Pa. To prevent a breachy colt from jumping over fences, it should be made to wear a "yoke." This consists of a bent hickory stick, something like an oxbow, which is put around the neck; to the bottom of this is affixed a short piece of scantling, in which a stout pin one foot long is inserted. The pin projects forwards, and when the colt attempts to jump, the pin catches in the rails of the fence, and holds him down.

To Destroy Musk-Rats.—"L. L.," Boston. Musk-rats are very fond of apples. If apples are cut in slices and scored with a pen-knife, and arsenic rubbed into the score marks, the rats will eat the bait, and may be destroyed in large numbers. The baits must not be placed too thickly, or the rats will carry them off and store them up in their holes, instead of eating them at once, but should be laid out at night and left during the day, if they are not disturbed, until they are all killed off.

Stock for the Dairy.—"E. B. M.," Warren Co., Ohio. For a small butter dairy, the Alderney, Jersey, or Guernsey cows are most suitable. These are all regarded as different breeds, but yet they are very much alike in their valuable butter-producing qualities. For a milk dairy where the cows are to be sold for beef after they are no longer profitable to milk, there are no cows that surpass good grade or pure Short-horns from milking families. It is not well, as a general thing, to divide one's business into butter-making and beef producing. But if it is to be done, we would choose the Short-horn first for the two purposes combined, and the Devon next.

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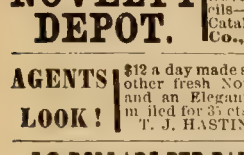

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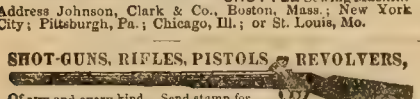

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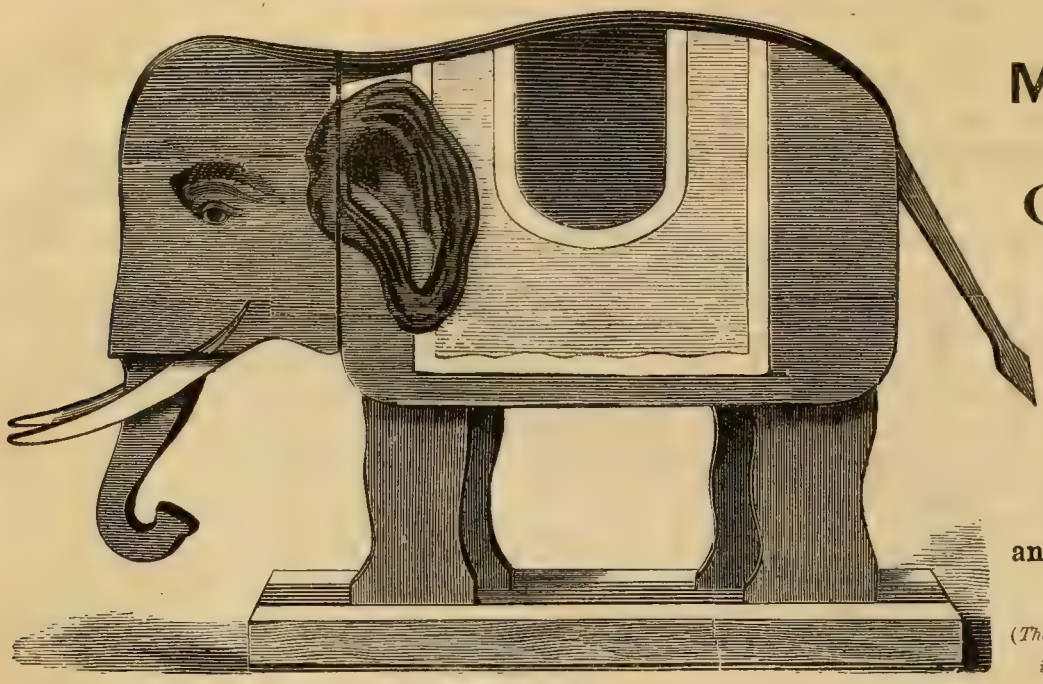

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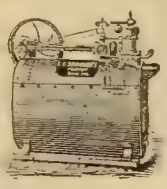

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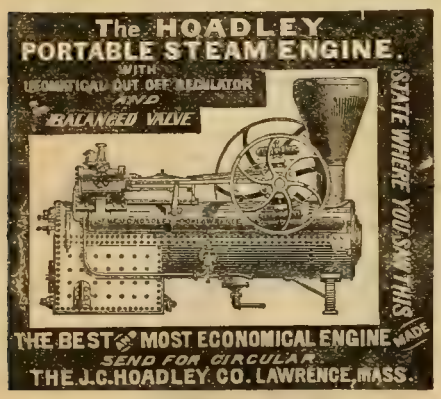

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VOLUME XXXIV.—No. 9. NEW YORK, SEPTEMBER, 1875. NEW SERIES—No. 344.

THE TRAIN BLACKSMITH.—*Drawn and Engraved for the American Agriculturist.*

Every wagon train, whether it belongs to the Quarter Master's Department of the army, engaged in carrying supplies to the frontier military posts, or a trader's train, such as may still be seen in Texas, New Mexico, and other states and territories, where railroads have not superseded them, has a blacksmith. In the regular army train there is the forge wagon, a regular blacksmith shop upon wheels, but in smaller or private trains, the portable forge and the blacksmith's kit, are stored in an ordinary wagon. Those who have never traveled across the elevated plateaus west of the Mississippi, where the rarified air is free from moisture, can have any idea of the manner in which everything made of wood will shrink. A bucket that has been used in the morning, will dry so much during the day, that unless care be taken, it will fall to pieces by night. Wagons made at the best establishments, where every particle of wood used in building them, was first thoroughly kiln-dried, will soon need to have all the irons set up, and the tires soon re-set. The train blacksmith has an easy time on the march, but as soon as the train encamps at its end, his work begins, and he often finds all that he can do by working late at night, and when there is a day of rest in camp, it is far from being a day of rest for him. Every teamster has a job for the smith, either about his wagon or mules, which often need to be shod, and a lively time it sometimes makes; then those who have saddle horses want them shod, and even the cooks come along with a useless camp kettle, which a rivet will restore to its former servicable condition, and all contribute to make the extemporized smithy a busy place. The artist, Mr. Cary, has drawn for the above engraving, a scene which, to those who have "crossed the plains," must recall many an encampment. The very efficient looking blacksmith is not quite up to the times, or he would have one of the forges with rotary blowers, figured in the *Agriculturist* for May last, which have no bellows to dry up and become useless.

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Calendar for September.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Pennsylvania, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	W	5 24	6 35	7 30	5 27	6 33	7 30	5 29	6 31	7 30
2	T	5 26	6 33	7 59	5 28	6 31	7 51	5 30	6 29	7 53
3	F	5 27	6 32	8 9	5 29	6 30	8 12	5 31	6 28	8 15
4	S	5 28	6 30	8 31	5 30	6 28	8 35	5 32	6 26	8 39
5	S	5 29	6 28	8 57	5 31	6 26	9 2	5 33	6 24	9 8
6	M	5 30	6 26	9 28	5 32	6 24	9 34	5 34	6 23	9 11
7	T	5 31	6 25	10 3	5 33	6 23	10 10	5 35	6 21	10 18
8	W	5 32	6 23	10 51	5 34	6 21	10 59	5 35	6 20	11 6
9	T	5 33	6 21	11 47	5 35	6 19	11 54	5 36	6 18	morn
10	F	5 35	6 19	morn	5 36	6 17	morn	5 37	6 16	0 1
11	S	5 36	6 17	0 54	5 37	6 16	1 1	5 38	6 15	1 8
12	S	5 37	6 15	2 2	5 38	6 14	2 7	5 39	6 13	2 13
13	M	5 38	6 14	3 14	5 39	6 13	3 17	5 40	6 12	3 22
14	T	5 39	6 12	4 26	5 40	6 11	4 29	5 41	6 10	4 32
15	W	5 40	6 10	rises	5 41	6 9	rises	5 41	6 9	rises
16	T	5 41	6 8	6 45	5 42	6 7	6 46	5 42	6 7	6 47
17	F	5 42	6 6	7 9	5 43	6 5	7 11	5 43	6 5	7 14
18	S	5 43	6 5	7 37	5 44	6 4	7 41	5 44	6 4	7 45
19	S	5 44	6 3	8 13	5 44	6 2	8 18	5 44	6 2	8 24
20	M	5 45	6 1	8 54	5 45	6 0	9 1	5 45	6 0	9 8
21	T	5 46	6 0	9 48	5 46	5 59	9 55	5 46	5 59	10 3
22	W	5 47	5 58	10 41	5 47	5 57	10 48	5 47	5 57	10 55
23	T	5 48	5 56	morn	5 48	5 56	morn	5 48	5 56	morn
24	F	5 50	5 55	0 5	5 49	5 54	0 11	5 49	5 54	0 18
25	S	5 51	5 53	1 19	5 50	5 53	1 24	5 50	5 53	1 29
26	S	5 52	5 51	2 30	5 51	5 51	2 34	5 51	5 51	2 37
27	M	6 53	5 49	3 39	5 52	5 49	3 42	5 52	5 49	3 44
28	T	5 54	5 47	4 46	5 53	5 18	4 47	5 53	5 48	4 48
29	W	5 55	5 46	sets	5 54	5 46	sets	5 54	5 46	sets.
30	T	5 56	5 44	6 13	5 55	5 45	6 15	5 55	5 45	6 17

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart	7	4 54 ev.	4 42 ev.	4 30 ev.	7 18 ev.	3 48 ev.
Full M'n	15	7 58 mo.	7 46 mo.	7 34 mo.	4 22 mo.	6 52 mo.
3d Quart.	22	2 17 mo.	2 5 mo.	1 53 mo.	1 41 mo.	1 11 mo.
New M'n	29	8 11 mo.	7 59 mo.	7 47 mo.	7 36 mo.	7 5 mo.

AMERICAN AGRICULTURIST.

NEW YORK, SEPTEMBER, 1875.

The small grains are all harvested, and corn is not yet ready. To sow the fall crops is the chief pressing work at present. October and November are, or ought to be, the busy months of the year, and to prepare for the work then to be done, will require much thought and study. On many farms these two months are idle ones. Nothing is doing in the fields but the ripening of weeds, and the scattering of their seeds over the farm. The fallow fields, which should then be plowed, lie beaten and packed by rains, until the soil is sealed up against the beneficial effects of both air and water. It is then dormant, and in the spring will be in poor condition to bear a crop. It is only in labor that there is profit, and one great fault of our farming is that we do not expend sufficient labor on the land. Labor judiciously used, seldom fails to return its cost with abundant interest, and how to expend labor profitably, is a matter that should be thoughtfully considered during any leisure of this month. There will be plenty of work, however, to keep the hired help busy. No farmer should discharge his men now, simply because he has time to handle the plow himself. A good farmer can earn more than a dollar a day any time, by doing a score of those things which no one can do so well as himself, or by planning work for boys or men to do. A hundred acre farm can well afford to keep two hired hands at work steadily, if the farmer is able to direct their work, as he ought to be. At the plow he is worth no more than a capable boy—possibly 50 cents a day. He can not afford to work for so little money. His whole farm stops paying interest while he has the plow in his hands, and gives no thought to other matters. The man who can direct the labor of other men, is worth more than his labor, and unless a farmer is capable of doing this, his profits will be simply a laborer's days wages.

Hints about Work.

Sowing Wheat and Rye.—Wheat requires a better soil than rye, and where the soil is not good enough to yield at least 15 bushels of wheat to the acre, it would be better to sow rye, which might bring 25 or 30 bushels. It is useless to sow the more delicate white wheats, except in the very best soils. The amber and red wheats are safer to sow on medium and light soils. The past has been a wet summer, and there will be few complaints of a soil too dry for sowing. Fields not yet plowed, should be turned over at once, and harrowed thoroughly until the soil is well settled. A firm mellow soil is needed for wheat or rye. Sowing by drill is the safest method. The saving of seed will nearly pay for the use of the drill. Drills may be hired for 50 cents an acre or less. The next best manner of sowing, is to broadcast the seed, and cover with a cultivator. If the seed is sown broadcast, the ground should be rolled thoroughly after being harrowed. Drill sowing saves the labor of harrowing afterwards. Where the fly is not feared, early sowing is to be preferred. It is a choice of evils between the dangers of the fly on the one hand, and of winter killing on the other. If the soil is in good condition, the time of sowing is a matter to be decided according to circumstances, locality, and the judgment of the individual.

Steeping the Seed.—The small cost and labor of steeping the seed, is well repaid by the security it affords against rust and smut, and the quickening of germination. A steep that is very effective against smut, is a solution of 4 ounces of sulphate of copper (blue vitriol), to a gallon of water. This is poured over the wheat, heaped on the barn floor, and the grain is rapidly shoveled over and mixed, until every seed is moistened with the solution. It is left in a heap for twenty-four hours, after which it may be sown. A solution of one pound of guano to a pail of rain water, or stale chamber lye, is an excellent steep, not only preventing the smut, but hastening the sprouting of the seed. Ground Gypsum (plaster), should be used to dry the grain previous to sowing, if anything is needed, but lime should not be used with guano water, or lye. Strong salt and water is frequently used as a steep, with good effect; after which the seed is mixed with finely slacked lime until dry, and sown immediately.

Depth of Sowing.—It has been found by experiments, that at one inch below the surface every seed of wheat grew, if the ground is moist, while at two inches seven-eighths of the seed grew, and at three inches three quarters grew. Notwithstanding this we would rather sow two inches deep than one.

Timothy Seed.—If sown with the wheat now, and clover is to be sown in the spring, from 4 to 6 quarts per acre may be used. If no clover is to be sown, a peck of grass seed is not too much. We prefer to go over the ground as soon as the wheat is drilled, and sow with a broadcast sower, or by hand, rather than drill in with the seed. It is easy to measure the proper distance for the land by the foot marks in the soft soil. The seed will find its way into the mellow soil, and be sufficiently covered. A quarter of an inch is the proper depth for grass seed. The fine manure from the poultry house, will make a valuable top-dressing for timothy, and will help the wheat. In place of it 100 pounds of guano to the acre may be used.

Thrashing.—The straw and chaff are too valuable to be wasted in the yards, or for bedding, where leaves, swamp muck, or even dry earth or sand can be used. By using some oil-cake meal, bran, or other meal, straw or chaff may be made equal to the best hay. Read and study over the articles by Prof. Atwater on this subject, which have appeared in the *Agriculturist* for the past few months. The proper use of straw as fodder, is one of the most important economies of the farm.

Clover Seed will be a good crop this year, wherever there has been a good stand of clover. When well saved, it is the most profitable crop on the farm. Both seed and hay at the same time, can hardly be saved, and the hay may as well be sacrificed for the sake of the seed. This crop may be cut with the mower, and raked with the horse-rake into windrows, where it may be exposed to rain and sun for many days without injury. On the contrary, the seed will thrash and hull the more easily. It should be drawn in when perfectly dry, and thrashed at once. The chaff may be stored in a bin or heap in the barn, to be hulled in dry frosty weather, when convenient. Scatter the chaff, which will contain some seed, over the meadows.

Sheep.—Sheep should have some better feed than the bare stubble at this season. With some grain or mixed feed, sheep will pick around the fields and consume much of the rubbish. No animal has a more vigorous digestion than a sheep, or can more readily turn fodder into meat and fat—but it must have something from which it can produce these. Not even a sheep can bring something out of nothing, and yet many farmers who keep a few sheep, seem to act as though they thought sheep could do this. Those who make a business of sheep raising, know that they must have good food and the best care, or that with their low nervous system and small supply of blood, they go down very quickly A sheep has a very small brain, and but four or five pounds of blood, and possesses no force or power to resist misfortune. But having little nervous force, it wastes no energy in action, but eats and rests, and turns all it eats into profit. This explains why sheep will fall away and die off so quickly if neglected. Neglect now, will be irreparable by and by. "A sheep well summered is half wintered."

Breeding Ewes.—For early lambs the ewes should be turned to the rams this month. A two-year-old ram will serve a hundred ewes, if he is well fed, kept in a yard, and the ewes put with him at night, until all are served. A ewe remains in heat twenty-four hours. As the ewes are served, which may be known by keeping the ram's brisket smeared with Venetian red and linseed oil, they should be placed in a flock by themselves, and well fed. On the condition of the ewes will depend in a great measure the value of the lambs. A pure Cotswold ram, crossed on good Merino or native ewes, produces excellent market lambs.

Cows and Calves.—As the feed falls off, two quarts of corn-meal a day will help to keep up the quantity and richness of the milk. Calves and yearlings should not be allowed to fall off in condition at this season.

Swine.—Pork is high, and will probably remain so. But it will be safest to hurry up the feeding swine, and make sure of the market. By giving extra attention now, providing dry feeding pens, and feeding liberally, twice as much pork can be made from the same feed in this month, as can be made in December. While we can hardly expect higher prices, we can not tell what may happen to affect the market unfavorably, and it may be well to make sure of a profitable market while we can.

Sundry Matters.—It would be a good plan to keep a note of every little thing that needs attention, so that by and by all may be done in order. There will be drains to make and to repair, fences to close that have been opened, stacks to top off and prop up, leaves to rake up in wood lots, brush to clear off, roads and lanes to repair, tools to gather up and repair, sheds to repair, stables to clean out and whitewash, and a hundred things to do that must be provided for or they will go undone. Every farmer should carry a note book and pencil in his pocket, and make use of them.

Work in the Horticultural Departments.

The general harvest in orchard and garden will begin this month throughout the northern states. Everything should be in order for storing and marketing fruits and vegetables, else much time will be lost in getting baskets, crates, and barrels if delayed until the crops are ready for gathering. The weeds make a comparatively slow growth now, and it will be easy to keep the late crops clear of them. Drains may be laid now, except in low places where it is wet and swampy; in such spots the only drain that can be used is an open one with sides slanting to prevent caving. Drains about the house and barn should be cleared out and put in proper condition for the winter.

Orchard and Nursery.

Marketing.—Early varieties of apples and pears must be marketed as soon as ripe, and to bring the highest price, they should be carefully picked and assorted. There are quantities of fruit brought into market every fall, which is so poorly packed and assorted that it will not sell for the cost of the crates, while that of transportation is a loss to the raiser. It cannot be too often repeated that good fruit will bring a good price, even when the market is glutted with poor stuff. Those who throw out all inferior fruit, and pack only the best, putting this up so carefully that there will be no rolling about or bruising in transportation or in handling, find fruit growing profitable.

Home Markets are too often overlooked, and large towns and villages in fruit districts are often poorly supplied, the growers thinking it necessary to send their fruit to New York and other large cities. Those who have cultivated the home markets, and kept them regularly supplied, have found it profitable; fruits can be delivered in a riper condition than when packed for a distant market.

Drying Fruits is an important industry in many sections of the country, especially in the line of peaches and apples; the quicker the fruit is dried the brighter it will look. It is commonly spread on boards and taken in every night; this makes a great deal of work, and for small lots a glass frame like a hot-bed, with holes in the sides, covered with wire cloth, answers a good purpose. Where large quantities are dried, recourse must be had to some of the patent fruit dryers now in use.

Budding may be performed whenever well matured buds can be had, and the bark of the stock lifts easily. Directions have often been given together with illustrations to explain the process, so that a novice can succeed after a little practice.

Labels.—Prepare a stock of these for use whenever needed. Red cedar is most durable whether to tie on or use in the soil as a "stick" label. They are made by machinery, and are quite cheap. They are smeared with white lead or chrome yellow in oil before writing.

Fall Planting.—We are frequently asked if it is desirable to plant fruit-trees in the fall. It depends upon the locality and the kinds; in sections where the fall is usually warm and long, it is better to plant then; the soil is in good condition, and there is usually more time to do the work properly than in spring. Observe the directions given in the spring months. Make a plan of the orchard and mark the location of every tree. Whether planting is done in fall or spring,

Order Trees Now; they can be taken up better, and are transported more safely than in spring, and if not set now, can be heeled-in and be at hand to plant at any time in spring.

Peaches, Cherries, and other stone fruits should, in northern localities, be planted in spring; in Delaware and southward, they are often planted in fall.

Peach-Stones, and the seeds of stone fruits generally should not become dry. Small lots may be placed in a box mixed with earth and buried in a dry spot, or put in a cold cellar for the winter. Large quantities of peach stones are stratified by spreading them a few inches thick and covering with earth, or they are spaded in; of course they have to be sifted out in spring to be planted.

Seeds.—There are many varieties of tree seeds which do not ripen until fall; these may be gathered as soon as ripe, and sown, or kept mixed with sand in a cool place until spring. Seedlings of forest trees should be kept clear of weeds, and it will be safe to give all a good covering of leaves the first winter.

Nursery Rows.—Cultivate the soil between the rows as often as necessary to keep the ground light and free from weeds, taking care not to bruise or break any of the young stock.

Pears should always be ripened in the house; when fully matured, pick and place on shelves in the fruit room, where they can be frequently inspected. Choice specimens for market should be wrapped separately in soft paper and packed in shallow boxes as soon as they show signs of mellowing; this will pay where choice sorts are grown, and there is a demand for an extra article. Ordinary good fruit is best packed in new neat half-barrels, lined with white paper.

Fruit Garden.

Blackberries.—After the old canes have fruited, they should be cut off and burned. Tie up the new growth to stakes, cutting back to the required hight, as given last month. Dig out all suckers which appear between the rows, unless needed for planting, which is better done in fall than in spring; keep the ground loose and free from weeds, by means of the horse cultivator.

Raspberries.—Cut out all old fruiting canes which may have been left until this time, and cut back the new growth as for blackberries. The plants will be benefitted by a dressing of fine manure, forked under slightly between the rows. Most of the red varieties are propagated by suckers, or from root cuttings. Black-Caps are multiplied by covering with earth the tips of the shoots, which bend over late in the season; these will make roots, and in the spring may be cut from the old plant, and set in rows in rich soil.

Strawberries.—Fill up all vacancies in the old beds, and set out new ones. Take only well-rooted runners, and if the weather is at all dry, dip in thin mud before setting. Plants set in the fall, may yield a small crop the following spring, but there is no real gain over spring planting.

Grapes.—The grape crop in many localities will be small, owing to the severity of last winter; the vines should not be neglected, but provision made for securing a healthy, well-ripened growth for next season. Where heavy rains have compacted the soil, use the horse or hand cultivator to make it light and open. Catawba, Isabella, Iona, and Diana, are the best keepers, and should ripen thoroughly. It is useless to try to keep Concords.

Currants and Gooseberries.—Make cuttings of the thoroughly ripe wood, and plant at once. Plants from cuttings set last fall or spring, may be transplanted into rows where they are to grow.

Kitchen Garden.

As soon as crops are gathered, the ground should be cleared of weeds, plowed or spaded, and planted with some quick growing crop, such as turnips, spinach and the like; never allow the ground in the garden to remain idle for any length of time. In starting a new garden, begin this fall by turning over the sod, first covering it with a heavy dressing of manure. The sod will decay during the fall and winter, and in spring manure the land heavily again and cross-plow. Before plowing remove all rocks and stumps, so that a smooth straight furrow may be turned. Make it a point to attend some neighboring fair with the family, and if possible, take along some of the best products of the garden and orchard, it will stimulate the boys to renewed exertions in the growing of fine fruits and vegetables. Provide reliable books upon the different branches of horticulture, for reading during the evenings, which are now growing longer, and do not forget to add one or more good agricultural and horticultural papers.

Asparagus.—Apply a dressing of coarse and littery stable manure, after the tops have been cut off and burned, to prevent the seed from growing.

Beans.—Gather from the last plantings either for market or preserving in salt for winter use. Dry Limas when there are more than can be disposed of fresh, as they are excellent in winter. Save the earliest, largest, and fullest pods for seed.

Cabbages and Cauliflowers.—Seeds of these may be sown to make plants for setting out in spring. The time of sowing will depend upon the locality; near New York it is from Sept. 15th to 25th. The object is to get good strong plants before the ground freezes. In November they are pricked out into cold-frames, where they pass the winter. Market the medium crops as soon as of sufficient size, and clear the ground of stumps and rubbish.

Corn.—As fast as the corn is gathered, cut up the stalks for use as fodder for winter, or to feed out now to the cows in milk. Corn may be dried for winter use; boil long enough to set the milk, and then cut from the cobs and dry.

Cucumbers.—Gather for pickles every other day, choosing those from two to four inches long. Take care not to trample on the vines when gathering.

Celery is more easily grown by flat culture, than by the old method of trenches. Keep the soil open and loose, as the principle growth is made this month. If some is wanted for early use, it may be earthed up, first carefully drawing the earth around each plant with the hand, and then banking it up by plowing a furrow each side of the row, and drawing the earth around the plants.

Egg Plant.—Pick off all eggs and beetles of the Colorado potato "bug," which seems to prefer this plant to the potato. Place a whisp of straw or a shingle under the fruit, to keep it from the ground. Use before the seeds become hard.

Lettuce.—Sow seeds for a late crop, and transplant as soon as large enough to handle.

Melons.—Pick off all fruit which will not ripen before frost. A handful of straw or hay placed under the fruit, will cause it to ripen evenly.

Onions.—Gather when the tops fall over, and store in a dry, airy place in thin layers.

Spinach.—Sow for wintering over about the middle of the month in 15-inch drills; the thinnings may be used this fall.

Sweet Potato Vines need to be lifted every week or so, to prevent rooting.

Squashes.—Remove the vines of the early sorts which have finished bearing. Let the vines of the winter sorts root freely at the joints, and do not disturb them after they have covered the ground.

Tomatoes.—Do not allow the fruit to come in contact with the ground, but place straw or brush under the plants, unless they are trellised. Destroy the large green "worm," which eats the foliage.

Turnips.—Hoe frequently, until the leaves cover the ground. Flat sorts may be sown early this month in spots where the crops have been gathered. Thin out as soon as large enough to work among.

Flower Garden and Lawn.

If the lawn and grounds are at all times kept scrupulously neat, they will be attractive even though there are but few shrubs or other plants in flower. Mow the grass often, to keep down the annual weeds which appear all the season, especially in newly made lawns.

Dahlias, and all plants requiring stakes, must be provided with them as soon as tall enough to need them, else the wind will break many down.

Herbaceous Perennials.—The latter part of this month is a good time to move and divide old clumps, as many of them commence growth too early in spring to move with safety; this is especially the case with pæonies.

Perennials and Biennials.—Sow seeds at once in boxes, so that they will make plants suitable for transplanting in spring. Shelter the young seedlings with lattice-work or boughs from the sun.

Bulbs for spring flowering may be set the latter part of the month in the northern states.

Greenhouse and Window Plants.

Everything ought to be in readiness for the reception of plants by the middle of the month at the latest. Repairs and alterations must not be neglected until the last minute, else there will be danger of their being hurried and half done. Secure the stock of coal, potting earth, moss, pots, and whatever is needed, as soon as possible.

Window-Boxes may be overhauled and replanted this month, so as to be ready for taking in so soon as frosts come.

Cuttings of any bedding plants should be made now for a stock to keep over winter; they will make good plants in a month.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist,* from our daily record during the year, show at a glance the transactions for the month ending Aug. 12th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	361,000	4,117,000	1,984,000	21,000	——	411,000
24 d's *last* m'th	279,000	8,918,000	2,912,000	23,000	——	815,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	497,000	8,711,000	3,165,000	49,000	84,000	1,604,000
24 d's *last* m'th	417,000	5,891,000	1,985,000	31,000	——	2,117,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1875	361,000	4,117,000	1,984,000	21,000	——	411,000
28 days 1874	252,000	2,914,000	5,763,000	41,600	3,200	397,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1875	497,000	8,711,000	3,165,000	49,000	84,000	1,601,000
28 days 1874	269,000	3,962,000	6,125,000	21,000	——	849,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Aug. 9, 1875	553,894	783,346	21,608	1,163	591,484	201,029
July 12, 1875	550,919	1,152,586	41,323	1,163	823,161	312,266
May 11, 1875	969,804	1,512,924	16,124	16,537	515,209	229,655
Jan. 11, 1875	3,675,122	1,019,900	50,889	191,470	877,014	145,617
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	794,722	135,882

4. *Exports from New York, Jan. 1 to Aug. 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1875	1,129,941	14,659,208	7,225,550	120,163	165	75,147	229,889
1874	1,365,180	23,290,750	14,513,411	531,011	320	72,511	265,883
1873	791,998	9,248,612	7,669,835	327,070	19,226	20,839	92,196
1872	541,494	5,479,949	11,577,323	510,678	22,066	29,716	123,093
1871	1,097,073	10,556,678	6,311,032	71,399	81,797	16,761	——
1870	1,069,227	10,236,257	2,861,617	65,134	——	11,205	——
1869	812,764	9,393,803	1,557,077	72,811	——	12,727	——
1868	575,091	3,209,304	4,903,872	158,093	——	46,643	——

5. *Receipts at head of tide-water at Albany each season to Aug. 1st.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875	24,100	5,978,600	1,784,800	54,100	——	915,500
1874	32,400	11,029,900	8,140,400	189,880	74,700	1,214,400
1873	57,700	6,804,400	5,127,000	550,400	22,200	1,672,100
1872	47,100	2,951,000	11,478,000	245,800	101,500	3,169,100
1871	111,400	6,105,000	8,415,000	57,900	40,400	1,392,100
1870	154,900	6,752,600	1,298,000	271,000	82,400	1,472,060

CURRENT WHOLESALE PRICES.

	July 12.	Aug. 12.
PRICE OF GOLD	115 5-8	114
FLOUR—Super to Extra State	$4 60 @ 6 15	$5 40 @ 7 15
Super to Extra Southern	4 60 @ 8 00	5 35 @ 8 75
Extra Western	5 15 @ 8 00	6 10 @ 8 75
Extra Genesee	5 65 @ 7 00	6 50 @ 7 75
Superfine Western	4 60 @ 5 00	5 40 @ 6 00
RYE FLOUR	4 30 @ 5 50	5 10 @ 6 25
CORN-MEAL	3 65 @ 4 75	— @ —
WHEAT—All kinds of White	1 25 @ 1 40	1 55 @ 1 70
All kinds of Red and Amber	1 15 @ 1 38	1 35 @ 1 60
CORN—Yellow	83 @ 85	84½ @ 85½
Mixed	75 @ 81¼	75 @ 84½
White	88 @ 90	90 @ 92
OATS—Western	63 @ 71	64½ @ 71½
State	61 @ 71	66 @ 72
RYE	90 @ 1 10	97½ @ 1 10
BARLEY	Nominal	1 20 @ 1 25
HAY—Bale, ₩ 100 lbs	60 @ 1 10	70 @ 1 12½
STRAW, ₩ 100 lbs	50 @ 90	50 @ 90
COTTON—Middlings, ₩ lb	15⅝ @ 16	14⅜ @ 14¾
HOPS—Crop of 1874, ₩ lb	25 @ 36	18 @ 25
FEATHERS—Live Geese, ₩ lb	37 @ 62½	35 @ 60
SEED—Clover, ₩ lb	11 @ 11½	11¼ @ 11¾
Timothy, ₩ bushel	2 60 @ 2 75	2 70 @ 2 87½
Flax, ₩ bushel	1 85 @ 1 90	1 85 @ 1 90
SUGAR—Refi'g & Grocery ₩ lb	7 @ 9½	6¾ @ 9¾
MOLASSES, Cuba, ₩ gal.	30 @ 40	36 @ 45
New Orleans, ₩ gal	70 @ 74	70 @ 72
COFFEE—Rio (Gold)	17¼ @ 20	17½ @ 20
TOBACCO, Kentucky, &c., ₩ lb.	10 @ 25	9 @ 24
Seed Leaf, ₩ lb	6 @ 55	6 @ 55
WOOL—Domestic Fleece, ₩ lb	25 @ 60	25 @ 58
Domestic, pulled, ₩ lb	25 @ 50	25 @ 50
California, clip	15 @ 36	15 @ 34
TALLOW, ₩ lb	9 @ —	9 @ —
OIL-CAKE—₩ ton	40 00 @ 45 00	40 00 @ 45 00
PORK—Mess, ₩ barrel	20 40 @ 20 50	21 65 @ 21 75
Prime Mess, ₩ barrel	19 25 @ 19 50	19 25 @ 19 50
BEEF—Plain mess	8 00 @ 9 50	8 00 @ 9 50
LARD, in tres. & barrels, ₩ lb	12½ @ 13½	12¾ @ 14¼
BUTTER—State, ₩ lb	15 @ 30	16 @ 35
Western, ₩ lb	13 @ 26	14 @ 29
CHEESE	3 @ 12½	3 @ 11¼
BEANS—₩ bushel	1 60 @ 3 25	1 50 @ 2 90
PEAS—Canada, free, ₩ bu	— @ 1 25	Nominal.
EGGS—Fresh, ₩ dozen	20 @ 23	21½ @ 25
POULTRY—Fowls	13 @ 20	13 @ 18
Turkeys—₩ lb	10 @ 15	14 @ 17
Geese, ₩ pair	1 25 @ 2 25	1 25 @ 2 25
Ducks, ₩ pair	60 @ 1 60	50 @ 87½
PIGEONS, ₩ doz	1 00 @ 2 25	1 75 @ 2 00
WOODCOCK, per pair	87 @ 1 12	60 @ 75
SPRING CHICKENS, ₩ lb	25 @ 35	16 @ 20
TURNIPS ₩ bbl	— @ —	1 25 @ 1 50
CABBAGES—₩ 100	4 00 @ 7 50	1 75 @ 5 00
ONIONS—₩ bbl	2 00 @ 4 00	2 25 @ 4 00
POTATOES—₩ bbl	1 50 @ 6 50	75 @ 2 25
SWEET POTATOES—₩ bbl	— @ —	— @ —
BROOM-CORN	7 @ 13½	7 @ 13½
PEARS, per crate	— @ —	75 @ 5 00
CURRANTS, ₩ lb	6 @ 15	5 @ 12
WHORTLEBERRIES, ₩ bush	5 00 @ 8 50	1 50 @ 3 00
APPLES—₩ barrel	1 50 @ 4 50	1 75 @ 3 50
CRANBERRIES—₩ box	— @ —	— @ —
BLACKBERRIES, ₩ qt	— @ —	8 @ 20
PEACHES, per crate	— @ —	25 @ 2 00
GREEN CORN, per 100	— @ —	50 @ 1 00
GREEN PEAS, ₩ bbl	2 25 @ 1 50	1 75 @ 3 00
TOMATOES, ₩ crate	2 50 @ 4 00	75 @ 1 75
STRING BEANS, per bag	1 00 @ 2 50	50 @ 1 50
CUCUMBERS, per bush. box	50 @ 75	50 @ 75
WATERMELONS, ₩ 100	10 00 @ 40 00	7 00 @ 35 00
SQUASH, ₩ bbl	— @ —	50 @ 1 25
CAULIFLOWER, per bbl.	— @ —	3 00 @ 5 50

Gold has been up to 116⅜, and down to 111⅞, closing Aug. 12th at 114, as against 115⅝ on July 12th.... The Breadstuff markets have been very seriously disturbed during the past month, chiefly by the influence arising from the weather and crop reports from Europe, and this country. Early in the month, the cable advices were of very unfavorable weather in England and on the Continent, pointing to a deficient harvest yield, and a consequent probable heavy export movement of produce, from our own ports, at remunerative prices. Accordingly a brisk demand set in for Flour and Grain, mainly for shipment, but in good part also on speculative account, and values were quite generally quoted higher, with, of course, frequent fluctuations. Subsequently the extraordinary rain storms and floods at the west and northwest, threatened grave damage to our own crops, and, in view of this new source of danger to the anticipated supplies, further very extensive transactions, largely speculative, were reported in Flour, Wheat, Corn, and Oats, especially in Flour and Wheat, prices of which again became quite buoyant, stimulated in part by the protracted interruption of canal navigation, through the break in the canal, near Palmyra, N. Y. Toward the close, the market, however, exhibited less animation, and values ruled generally weaker. Several failures of prominent houses, in the banking and mercantile lines, in England and here, added to the disturbance in the course of trade, though not permanently affecting the markets. ..The dealings in Barley, noted in our tables, given herewith, have been wholly in new crop State to arrive in September....Provisions have been active, higher, and excited, closing, however, generally tame, and somewhat unsettled. Pork and Lard have been influenced in good part by speculative manipulations of the market....Cotton has been more freely dealt in, closing easier in price....Hops have been quoted lower, on a moderate movement. A bale of new crop state—the first received this season—was recently sold at 60 cts. per lb....Hay, Seeds, and Tobacco, have been rather more sought after, closing firmly....Wool has been quoted easier in price, on increased offerings, and some urgency on the part of holders to realize. Toward the close, however, rather more steadiness has been noted. The movements in domestic being indicative of a moderately active market. The inquiry from manufacturers has been checked by the stormy weather, which was against a full attendance of buyers in market. Fine Fleece has not been in much favor, and has been rather difficult to place without yielding a little in prices. Combing and Pulled Wool quoted firm, and generally of ready sale. Foreign Wool in rather more demand, especially carpet stock, which has been held with more confidence....Ocean freights have been quoted firmer, and quite active with Grain, Flour, Petroleum and Provision room in most demand. The later business indicated an easier range of rates on tonnage on charter. Flour by sail and steam to London, 3*s.* per bbl.; Grain by sail, to do., 10*d.* @ 10½*d.* per bushel; Grain by steam to Liverpool, 10 @ 10½*d.*, and by sail, to do., 9 @ 9½*d.* per bushel. Grain tonnage for Cork and orders, 7*s.* 6*d.*; for Penarth Roads, and orders, 7*s.* 3*d.*; for the Continent, 7*s.* 3*d.* @ 7*s.* 6*d.* per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
July 19	9,795	97	2,993	20,936	22,402	56,223
July 26	8,701	166	3,829	36,740	25,016	74,452
Aug. 2	8,506	60	2,787	28,259	20,170	59,782
Aug. 9	10,062	101	3,749	22,962	22,816	59,690
Aug. 16	9,019	80	3,322	27,213	20,920	60,554
Total for 5 Weeks	46,083	504	16,680	136,110	111,324	310,701
do. *for prev.* 4 *Weeks*	33,814	379	15,442	86,516	103,391	239,542

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,216	100	3,336	27,222	22,265
do. do. *last Month*	8,453	95	3,860	21,629	25,847
do. do. *prev's Month*	8,259	76	4,167	18,567	27,749

Beeves.—The business of the past five weeks has been marked with a steady decline for both poor and good cattle. The decline began with a fall of ½c per lb. and a weak market especially for poorer stock. With only a slightly increased weekly average over last month, prices have given way fully 1c. per lb., and the market closes with prospects anything but satisfactory for shippers so far as common and medium grades are concerned. The Texas drive is now over for the season, and foots up to 151,618 against 166,000 for 1874, a loss of 14,400 head. The greater part of these cattle are now in Kansas with abundant grass after the heavy rains. The Chicago Live-Stock Reporter fears that heavy losses will occur on this class of cattle; it is not surprising, therefore, that "rumors of the Texan fever among these cattle" are beginning to be heard. The closing rates here were 7½c.@8½c. ₩ lb for Texas and Cherokee cattle to dress 55 lbs. ₩ cwt. with very slow sale; choice steers sold at 12½c.@13c. ₩ lb to dress 58 lb the gross cwt. in a small way, but 12½c. ₩ lb on an estimate of 57 lbs. was the general rate; native steers sold at 9½c.@10c. ₩ lb to dress 55 lb per cwt.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
July 19	8 @14 c.	11½@12½c.	12 c.
July 26	6½@13½c.	11 @12 c.	11½c.
Aug. 2	6½@13½c.	11 @12 c.	11½c.
Aug. 9	6 @13¾c.	11 @12 c.	11½c.
Aug. 16	6 @13 c.	10½@11½c.	11 c.

Milch Cows.—The market for cows has been dull and quiet. Steady rates have ruled during the month. Common cows have brought $45 to $50 per head; choice, $50 to $75, with sales of extra at $75 to $90 per head.... **Calves** have been in moderate demand, with an advance in value toward the close of the month; the closing prices were 6c.@9c. ₩ lb live weight for poor to prime veals, and $6 to $8 per head for fair to good grass calves. ....**Sheep and Lambs.**—There has been a lively market for fat stock through the month, easing off at the close with slightly lower prices. Poor to prime sheep ranged at the close from 4½c.@6½c. ₩ lb live weight, and poor to prime lambs from 6½c.@8½c. ₩ lb....**Swine.**—No live hogs have been offered. Dressed hogs have been in fair demand at 10½c.@10¾c. ₩ lb. Market pigs have sold readily at 10½c. ₩ lb dressed weight.

OUR Centennial OFFER.

July 4, 1776 . . . July 4, 1876.

April, 1842 . . . . . Aug., 1875.

The First Number of the *American Agriculturist* was issued in April, **1842.** It was therefore just **One-Third of a Century old** last month.—The work it *has* accomplished in that time we will not at present stop to rehearse. "EXCELSIOR" is our Motto—higher and higher—better and better in the grand future. The past and present Managers will necessarily fall by the way, in coming years, but this Journal will go on in its work of a century.

OUR NATIONAL CENTENNIAL

is to be celebrated in

1876.

AND

the Editors and Publishers of the *American Agriculturist* will honor its own completion of One Third of a Century, as well as honor the National Centennial, by making this Journal the most **Beautiful,** most **Valuable,**

AND

Cheapest Journal in the World,

Interesting and Highly Useful

TO

Every Man, Woman, and Child.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Remitting Money: — Checks on

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And TELL ALL

Friends and Neighbors,

Our Centennial Books

For Subscriptions

WILL OPEN

Sept. 1st, 1875,

AND

☞ Every person sending in his ☞ subscription after Sept. 1st, ☞ 1875, for the *American Agriculturist* for **1876,** will not ☞ only receive this Journal for ☞ all 1876, (Vol. **35** complete), ☞ but will also be presented ☞ with all the rest of this year ☞ **free of charge.** ☞

Those subscribing in September, will thus get the paper **FIFTEEN MONTHS,** or **Three Months Extra,** without extra charge.—The above applies to **ALL** subscribers, at single or club rates.

TERMS { From reception of subscription to the **end** of **1876.**

[*Postage in all cases paid by the Publishers.*]

One Copy	$1.60.
Four to Nine Copies	1.35 each.
Ten to Twenty Copies	1.30 each.
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Every Subscriber who remits an additional 25 cents, to pay for mounting, packing, and postage, will receive, pre-paid, a beautiful Picture, his choice, while any are in stock, of the three splendid Chromos

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"LOOK OUT"

but his choice must be named at the time of subscribing.

☞ The above liberal offer (of *three months extra*) will expire on September 30th. Please inform all your friends and neighbors. ☞

New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Catalogues.—The Fair List crowds our columns so, that we are unable to acknowledge the catalogues at hand. Our friends may be assured that their favors are not lost or unheeded.

Fairs for 1875.—The list of fairs to come off this autumn, will be found on pages 358–359. During the season we make repeated requests that the officers of the societies holding the fairs, or the managers of the fairs, would send us their official announcements direct. More have done this than heretofore, but still we are in many cases obliged to depend upon other papers, at the risk of copying typographical errors. Every one should hold it a duty to attend and exhibit at, and in every manner encourage his local fair, and after this, attend as many others as convenient. If you are a successful farmer, and a well-to do man, go to the fair for the purpose of letting some poor struggling fellow beat you in something; you can afford it, and it will be worth $50 to him.

The Dairy at the Centennial Exposition.—The American Dairymen's Association have appointed a committee to take charge of dairy products offered for exhibition. Butter and cheese in every form and style are especially desired. Communications in reference to this matter may be made to any of the gentlemen who compose the committee, viz.: J. V. H. Scovill, Paris, N. Y., Chairman; O. S. Bliss, Georgia, Vt.; E. S. Munson, Franklin, N. Y.; D. A. A. Nichols, Albany, N. Y.; J. M. Peters, N.Y. City, Sec. Butter and Cheese Exchange; David A. Lewis, New York City; L. B. Arnold, Rochester, N. Y.; G. E. Morrow, Chicago, Illinois; J. H. Reall, Philadelphia, Pa.; J. Wilkinson, Baltimore, Md.; T. S. Gold, West Cornwall, Conn.; F. D. Stone, Cleveland, O.; Artemas Ward, Sec. Philadelphia Produce Exchange.

Importation of Clydesdales.—Ten fine Clydesdale stallions recently arrived in New York from Scotland. They were imported by the Powell Brothers, of Crawford Co., Pa. These stallions weigh from 1,600 to 2,200 pounds. This is the largest single importation of these horses into the United States yet made. They have reached their destination in Pennsylvania, where they will doubtless do valuable service.

The Ayrshire Record.—The "Ayrshire Record" is to be the Herd-book of the Ayrshire Breeders' Association. It will be a continuation of the American and Canadian Ayrshire Herd Record, but a new series under control of the above named association. The editor is J. D. W. French, N. Andover, Mass. Entries for record may be made until October 1st, 1875.

Circular Saw Frame.—"C. F.," Butler Co., Pa. The hanging frames for circular saws, illustrated in the *Agriculturist* for May last, are not made for sale, so far as we know. They are so easily made by any carpenter, or any person who can make a mortice true, that it would scarcely pay to transport them from one place to another. From the description given, any mechanic should be able to make one with the greatest ease. The shafting, pulleys, and saw, can be procured at any foundry or machine shop.

The Floods in the West.

The present season has been a remarkable one. In the west the constant rains have prevented the cultivation of corn, and the fields are filled with grass. Cutworms have been more abundant than have ever been known, and both corn and tobacco in many places have been replanted four or five times, before a stand could be secured. Grasshoppers have done some damage in places, but most of it has been partially repaired by late replant-

ing. But the worst calamity has come in the shape of torrents of rain, which have beaten down the growing crops, sprouted the harvested wheat, and in destructive floods, which have swept extensive river bottoms clear of growing and harvested crops. Indiana, Ohio, Illinois, Missouri, and Kansas have suffered badly. The damage in single counties has been estimated above a million dollars, and the loss in the aggregate is many millions. This is doubtless over-estimated, but there has been immense loss, and will be much suffering, there can be no doubt. As to the effect on the markets for grain, it is premature to speculate. The condition of the crops in Europe is reported as greatly improved by fine weather, and the influence of the damages by rain and floods in European countries upon prices, is no longer felt. What will be the effect of the damage to our crops, when the actual loss is ascertained, remains to be seen, but it would seem to be impossible that an advance in values should not be maintained, if farmers do not hurry their grain to market. It would be an addition to our misfortunes, if the losses by reason of these disasters should be followed by a season of low prices.

WHAT $5.40 WILL DO.—By reference to page 329, it will be seen that the Publishers make a liberal Centennial proposition. They propose to open the subscription books now for 1876, and enter every name down on the books at once, and send the paper from the date of the subscription to the end of 1876, for a single year's rate. As four copies are sent for $5.40, postage prepaid by the publishers, this sum will pay for four copies of the paper all through next year and all the rest of this year.

Hydrophobic Peaches.—A seasonable warning in peach time. The Lucknow correspondent of the Indian Daily News, states that two native gardeners and a little boy were seized with hydrophobic symptoms after eating certain peaches. The fruit on being analyzed was found to contain a poisonous virus, and on further search being made, it was discovered that a pariah dog, which had apparently died mad, had been buried beneath the tree as manure."—This is from the London Graphic. The malady ought to have been perceived in the *bark* of the tree in time to warn the poor gardeners against the "poisonous virus," which is really too much of a bad thing.

Kinney's Strawberries.—In some notes about strawberries in August last, it was mentioned that Kinney's No. 10, raised by Mr. T. J. Kinney, Worcester, Mass., was not productive on our light soil. The reports of the weekly exhibitions of the Worcester Horticultural Society, show that it is valuable in some localities, as they speak highly of its quality, and state as evidence of its prolonged bearing that it had been exhibited for six successive weeks, a statement that probably needs qualification, as we can hardly suppose that the same vines continued in bearing for this length of time. Mr. Kinney has a still newer variety which he calls Eclipse, said to be a cross between his No. 10 and Jucunda, of which great things are expected in the way of productiveness and quality.

Importation of Percheron and Norman Horses.—Mr. Robert Stoddart has recently exhibited to us at his stables, 690 Greenwich st., New York, a remarkably fine lot of imported Percheron and Norman horses. 43 of these animals were at his stables at one time; they were the property of Mr. Dillon, of Bloomington, Ill., and Mr. Dunham, of Wayne, Dupage Co., the same state. 5 other horses were the property of Mr. John Virgin, of Fairberry, Livingston Co., Ill. This class of horses are so well known at the west through the numerous importations of these gentlemen, that we need only say these animals are equal to any imported previously by them. 170 imported horses have passed through Mr. Stoddart's stables the present season.

Borers.—"B. O. C.," Los Angeles Co., Cal., writes that an old fruit-grower there tells him that trees which branch at 18 to 20 inches from the ground are not attacked by borers, the alleged reason being that they will not work where the trunk is densely shaded. We shall be glad of other testimony on this point.

Progressive American Architecture, by G. B. Croff. This work has received the highest praise in all quarters, for its fullness of its details, and the general good taste, and unusual excellence of its designs. It is difficult to conceive how a greater variety of useful architectural matter could be compressed into one handsome, copiously illustrated volume. Published by the Orange Judd Company. Price, post-paid, $10.

More Books.—The Orange Judd Company have added to their list of publications the following standard works: *The Soiling of Cattle*, by Josiah Quincey. This was the first work upon this important subject, and remains the standard authority.... *Geyelin's Poultry Breeding.* This gives accounts of European methods with poultry not to be found in any other work. .... *Chemistry of the Farm and Sea*, by Doct. J. H. Nichols. These familiar essays are among the best of the popular science treatises of the day. See Book-List on another page.

For Only $1.60, any one can, this month, get the *American Agriculturist*, **Fifteen Months,** or from now away on to the **end** of 1876. (See page 329.) Will all the friends of the journal please make this fact known to their friends and neighbors.

A Proposed Soiling Crop.—The Rural New Yorker publishes a letter from a "Rural Editor," who writes from Nebraska, in which he states that Prof. Aughey, of the State University, finds among several native grasses, *Sorghum nutans* to be "exceedingly nutritious, and could, he thinks, be profitably introduced at the east as a soiling crop. The plant is being tested at the University, and Prof. A. kindly promised to send us seed, so that an experiment might be made to see how far the plant was adapted to the soil and climate of New York."—We shall look for the results of Prof. A.'s experiments in feeding this grass with interest. The "adaptability of the plant to the soil and climate of New York," was probably tested some thousands of years ago. It is rather strange that neither a professor nor an editor should know that this grass, *Sorghum nutans*, extends from Manhattan Island throughout the state. There is nothing like travel to open one's eyes.

The Potato "Bug" on its Travels.—Some of our associates who have been to the seaside, report immense numbers of the Colorado Potato Beetle on the beaches. At Rockaway, (L. I.), especially, they were in the sea-weed that is thrown up by the surf in myriads, and though rather quiet when wet, they were lively enough when they had a chance to dry, and were around on the verandas of the hotels in abundance. These may have started from New Jersey, and were blown ashore on the Long Island coast. It can hardly fail that some of them may alight upon the out-going steamers, and thus get a free passage to Europe, and verify Prof. Riley's prediction that this would be the manner of their introduction abroad.

SUNDRY HUMBUGS.—Whenever a person who has been engaged in some swindling operation through the mail is arrested, his letters, not being called for, are sent to the dead-letter office, and then the post-office authorities have a chance to see to what extent this kind of correspondence is carried, and those at the dead-letter office can know who are the foolish victims. It appears from these facts, and other evidence, that no scheme can be started, so absurd or improbable upon the face of it, but a large number are ready to catch at the bait. Let one advertise in obscure country papers, that he can for $10 make a return of $100 or more, the remittances will begin to flow in. The readiness to believe whatever appears in print, and to trust the representations of absolute strangers, is perfectly astonishing. The old saying that "people want to be humbugged," is in a great measure true, and it is a melancholy phase of human nature that there should be always a large number of persons ready and waiting for any swindle that may be offered. All the forms of insanity have not yet been studied, and in our opinion the morbid desire to try every new quack medicine, or to invest in improbable schemes, are as much forms of mental disease, as kleptomania. When some new swindle is offered, there are a few not so far gone with the disease, but they have sufficient caution left to lead them to inquire as to its character, but for one who does this, hundreds walk straight into the trap.....We have on several occasions warned our readers against all real estate agents who ask money in advance, and have over and over advised against having any money transactions with unknown parties. Recently persons have advertised that they had

LARGE SUMS OF MONEY

to loan on mortgages. Other advertisements appeared, offering for $1 to name the horses that would be sure to win at the Saratoga races. Last month two men, named Henry and Hall, were arrested for smuggling and swindling in diamonds, and it came out in the examination that these diamonds were probably stolen, and that, moreover, these same Henry and Hall were the chaps who could loan their money so freely, and were so very knowing in horse-jockey tricks. The case is a very complicated one, and we have not room for an account of it; the special point to which we wish to call attention, is that one of the chaps confessed that he had no idea of granting loans, but he charged $10 or more in advance, for the purpose of having the property of applicants surveyed, or the titles examined. This money in advance was what they were after, and when they had this safely in hand, all their interest in the applicant ceased. If he pressed them, it was easy to reply, "title imperfect," or "security not sufficient." Here were unknown men, who did not give their names, but had a post-office box as their sole address, daily receiving numerous letters, which contained advance fees. Those who sent this money must feel highly gratified to find that they have been playing into the hands of men, who had been arrested with apparently stolen diamonds in their possession. We repeat the advice, to have no money dealings whatever with unknown parties, whether in effecting loans, or selling real estate, and especially do not send a dollar in advance. This caution includes those

WALL-STREET STOCK-GAMBLERS,

who still have their advertisements in papers all over the country. Notwithstanding that we have frequently advised people to have nothing to do with these chaps, inquiries still come in regard to them. Here is a letter from a reader enclosing a very tempting advertisement, and asking, "will it do to respond and send money to speculate on?"—"Do!"—We havn't the least doubt that it will "do," any more than we have that you will be beautifully *done*. The "do" is what's the matter. Those who send money to these chaps, have no remedy whatever, as they send it for gambling purposes; all that the gambler need say is that he used the money according to his judgement, and lost, and that is the end of it. The men who advertise in this tempting manner, are not members of the stock-board; many of the respectable banking houses and the President of the Board of Exchange receive inquires about those parties, who hold out great inducements, complaining of their doings, and asking how lost money can be recovered. Legal advice has been taken, and it is found that there is no remedy at law. It is impossible to find the parties when a complaint is made. The letters of some of the victims of the Wall-st. swindlers are very pathetic; the President of the Stock Exchange is in frequent receipt of such, from shop-girls and others, who starved themselves, to invest their last dollar, in the hope of a small fortune, and lost it all past remedy. If persons have money, which they would rather invest in risky stock operations, than in any other way, they can find regular, honorable, and responsible brokers, who will hold out no false hope of great gain, but will invest the money according to their best judgment. Such brokers are members of the regular board, and are to be found when wanted; they do not advertise in the country papers with a lot of unintelligible street jargon. Our advice is, unless one has a sum of money that he can afford to loose, to keep out of Wall-st. altogether, but if he has any dealings there, let them be only with members of the stock board.....There are several so-called

"TELEGRAPHIC INSTITUTES"

in Ohio, Wisconsin, and other western states, which make great promises, but, to judge from the letters of complaint we receive, are but little short of humbugs. We would suggest to the young men who claim to have been swindled, that they write out their statements, and make oath to them before some Justice of the Peace or other authorized official. We notice that all these "Institutes" get all their money in advance. A young man wrote to the superintendent of a telegraph company, for his opinion of these "Institutes," and received the following reply: "I do not know much about these Institutions personally. It is reported that one can beat a young man out of his money about as well as another. *Neither* of them can furnish situations. Merit, supply, and demand, regulate that."....

GIFT CONCERTS OR LOTTERIES

appear to have simmered down to just one—and that in Texas, in aid of an Odd Fellows' Temple, at Dennison. Texas is naturally a grand state; parts of it are as near perfection as we expect to see on this globe; it has a great future in store, and the time will come when these schemes of gambling in the name of benevolence, will no longer be tolerated.....Inquiries continue to come about

"EYE CUPS."

We some time ago gave an opinion on this matter from one of the most eminent oculists in the country. We briefly repeat in substance. These eye-cups have an India rubber bag attached; the bag being pressed, and the cup placed over the eye, it is claimed that the convexity of the eyeball will be changed by atmospheric pressure, which, from the manner of the application, is an absurdity to start with. How many persons are able to tell the cause of any defect of sight? the use of these assumes that something is wrong in the shape of the eye, while it is very likely nothing of the kind exists, and if

it did, these eye cups would not alter it. A person with a $1,000 horse would, if the horse were ill, hesitate to take the risk of medicating it, yet with an eye, which is worth untold numbers of horses, persons will tamper and tinker as if it were no more precious than an old coffee-mill. Do not meddle with your eyes, either by the use of eye washes, eye cups, or any other appliance. If there is any trouble that such simple remedies as a cold water bandage will not relieve, seek advice at once

A friend in Massachusetts, sends us a pamphlet of

A "CATARRH CURE,"

and asks for an opinion of the medicine. He probably thinks that as Agassiz was able to draw an entire fossil fish from seeing a scale, we can give an idea of the value of a medicine by reading the advertisement—and he is mainly right. Here is evidently an intelligent person, who writes an unusually handsome and well expressed letter, a person who we are quite sure is looked up to by his neighbors as a clear-headed man of sound judgment, whose opinion in all ordinary matters is no doubt quickly formed, but when confronted by a quack circular finds he has no longer confidence in his own judgment, but has to ask others. If people would only judge of these things with ordinary common sense, they would see how absurd they are. Let us examine this catarrh circular a little. We are told on the first page that this is "the only reliable and scientific preparation for the radical cure, etc."—This assumes that the person who wrote thus knows all *other* preparations—which is absurd on the face of it We then read: "It is pronounced by eminent physicians to be the only reliable remedy ever yet discovered that will cure catarrh in all its stages."—Indeed! who and where are these "eminent physicians?" These quack medicine fellows if they can get hold of the name of a physician who is not at all eminent, are sure to parade it, but where are the eminent ones? We do not hesitate to say that no eminent or any other true physician ever made any such statement. Here are on the first page two statements which are false on the face of them. On the second page we read, "The presence of this not only loathsome, but really dangerous disease, is truly alarming, every third person being more or less afflicted with it."—Our acquaintance is tolerably large, and we do not happen to know of a single one who has catarrh. It may be that we do not happen to know the "third persons," or those *we* do know are "less afflicted" rather than "more." Then come the detailed symptoms which "pile up the agony" and immediately add in big type, (Now is the time to use Dr. Lane's great remedy, a sure and positive cure), and then the things catarrh will lead to, and the fearful results which will follow not taking the remedy are wonderful. It appears to us marvelous that a sensible person, after reading such a manifesto as this, can give it any further thought. ....One of the amusing things about our humbug correspondence is the way in which things that we supposed were antiquated, every now and then turn up as new. Here is G. O. T., living only about 25 miles from New York, who sends a circular and writes: "If it is a humbug I would like for you to know it, if you do not already"—and this circular is none other than that of

EDWIN EASTMAN.

This is hard, after all we have done and said, that any one should think that we didn't know Eddie. He is our prime favorite. Not know Eddie! We know him as well as any one does, for don't we know the man who wrote his *autobiography?*—To be sure, we can't say we have met Eddie personally, there being the slight objection that the person does not exist. So with the excellent Clark Johnson, M. D., of Jersey City, who sells the stuff the *injuns* taught Eddie to make, we might learn more of Eddie through Clark J., but for the fact that there "ain't no such person," but the quack who runs the concern lives in New York, sends over to Jersey City and gets the letters. Oh yes, we do know this circular. As the two principal persons therein mentioned exist only in imagination, we will leave our correspondent to guess whether it is a humbug or not.... But let us turn from these gross ailments of the body, and rise to the higher regions of sentiment. What are catarrh and colly-wobbles to "Psychometric Fascination" and things? who cares to read about consumption and rheumatism when there is a treatise on

THE ART OF SOUL CHARMING?

It is of no use going into particulars. Either sex can "fascinate and win in a few minutes the undying love and affection of any one they wish."—But that is not all: "Faithless lovers can be reclaimed, friendships cemented, confidence established, and general happiness secured."—To be sure these statements are very general, but we suppose that to accomplish all this, it must teach *him* to provide dry firewood and no end of new bonnets, and induce *her* to have the shirt buttons always sewed on, and to dispose of the mother-in-law, but when we think of the many things essential on both sides to secure "general happiness," we are struck with wonder at the power of the what's its name?—Oh, "Psychometric Fascination!"—This chap has undertaken a big contract, but it is in his favor that he comes from Virginia, the state which has produced so many great men can easily furnish a greater, (Connecticut furnishes the nutmegs). This Fascinator professes to do more than any president ever tried to do, and as to generals, while Virginia has produced some who could command armies after a fashion, here is one who can govern the affections and do all these wonderful things. This mighty man is named Townsley; more than this we shall not say, for were we to give his address, the results would be fearful to contemplate. This power "to fascinate certain persons, even against the will of the persons themselves," should not be laying around loose. Were we to give the address of Townsley, society would at once go to everlasting smash. He must be poor indeed who cannot raise 50 cents, for that is all that it costs to get "full instructions, drawings, etc., to enable any person" to psychometrically fascinate and set up the art of soul-charming. It is very cheap, but for the present we will allow the world to go on in the old way.

Astral Oil Removed.—Charles Pratt, whose Astral oil has a world wide reputation for excellence and safety, has recently removed from Fulton St., to 128 Pearl St., at which place he will hereafter dispense his illuminator.

New Remedies.—The many medical readers of the *Agriculturist* will thank us for calling their attention to a quarterly with the above title. Each number contains about 100 pages of carefully selected matter, giving all that is new in therapeutics, pharmacy, and the like. Wm. Wood & Co., N. Y.

Suckers on Corn.—"B. D.," Noble Co., Ohio. In rich ground, that is abundantly able to support a growth of suckers around the corn-stalk, it is not necessary to remove them. It is doubtful if at any time it is worth while to do so, because in poor ground corn does not sucker much. If removed at all, it should be done when the suckers are very small. In growing a crop of "Sanford" corn, which suckers very abundantly, we removed the suckers from a portion of the field for green fodder, but found no difference in the amount of the crop on the two portions of the field. The suckers were pulled before they were a foot long.

How to Apply Lime. — "E. McC.," Portersville, Pa. Lime should never be plowed under, but spread on the plowed ground and mixed with the soil by harrowing.

Merino or Cotswold.—"A. E. G.," Pike Co., Miss. Where wool is the chief object, there is no breed so valuable for improving our common native sheep as the American Merino. Half and quarter blood fleeces are in great demand, and they now bring a higher price in several markets than the pure-bred fleeces. The Merino will stand a hot, dry climate, and will subsist on a poor pasture better than the long-wool breeds. Where the pasture is good and mutton or lambs can be sold, the Cotswold is a profitable kind to cross on native sheep. The Cotswold is a sheep for good farmers on good land, and the Merino for those who are not so well situated.

A Good Short-Horn Heifer.—"J. M. S.," Yonkers, sends us an account of his Short-horn heifer, which recently calved, being then two years and a half old. She gave at the first milking 10 quarts, and continues to give 18 quarts per day. He asks our opinion of this heifer. We think her to be a very promising one, and one to be cherished, as well as her calves.

A Pertinent Query as to Potato Beetles, etc.—"A Subscriber," N. J., asks is there any use in trying to rid my potatoes of the Colorado beetle when my neighbors take no care to destroy them on their crops?—In this lies the root of the whole evil of insect pests and of most weeds. One man cannot fight against a legion of enemies successfully. He may clear his own crops of insects year after year, but he is at last overwhelmed by the new arrivals which come from his neighbors' places. Unless every farmer helps destroy them, it is impossible for a few to succeed, but if combined efforts were made for a few years, the pests would be destroyed or rendered comparatively harmless and easily kept down. They manage this matter well in Vineland, N. J., where every citizen has been engaged in destroying all pests of injurious insects for some years.

Salt for Hogs.—"W. P. Z.," Swedesboro, Pa. It is dangerous to give salt to hogs without limit or discretion. It irritates the stomach and intestines, and many deaths have been traced directly to its accidental excessive use. The symptoms of salt poisoning are very similar to those of cholera, extensive patches of inflammation and partial destruction of the lining membranes of the intestines being found after death. Yet salt in proper quantities is undoubtedly useful. To give it safely, it should be mixed with the feed, a handful only being thrown into a barrel of the feed. Or it may be mixed with an equal quantity of powdered charcoal, and a small handful of the mixture scattered along the feed-trough once a week for every dozen hogs. When hogs are at pasture, and can root in the ground as much as they wish, they need no salt.

To get Rid of Skunk Cabbage.—"G. P. F.," Phillipsburg, N. J. Draining will rid you of skunk cabbage. It thrives only in moist grounds.

Bermuda Grass.—"W. P. O.," Bowie Co., Texas. Bermuda Grass may be easily killed upon uplands, by plowing a light flat furrow, so as to turn the roots of the grass upwards, late in the fall. Two seasons in corn or cotton will kill every vestige of it, if the ground is only kept clean, and what grass may appear turned up to the hot sun. But as this grass makes one of the best pastures for the south, and one of the best sods to plow under as a fertilizer for cotton, it is sometimes better to encourage, than to destroy it. In addition to its value as a pasture grass, it makes excellent hay in places where few other grasses thrive. Upon low, moist ground it is impossible to eradicate it, but such places are worth much more for hay than for any other purpose.

When to Dig Muck.—It is most convenient to dig muck late in the summer, when the swamp is in the dryest condition. Straight ditches should be dug, and the muck thrown out in heaps on one side, where it will drain. The ground on each side of the ditch will dry considerably by early winter, when the dried muck can be hauled to the barn-yard for bedding, or to be mixed with the manure from the stables. By working in this way, the muck is dried and the swamp drained at the same time.

Tile-Drain Ditcher.—"P. J. B.," McDonough Co., Ill. We cannot give the name of the maker of a ditcher for making tile-drains. There is a machine made for this purpose, which we have seen do very good work, but the manufacturers do not make themselves known. This is unfortunate, as we have numerous inquiries for such a machine. No drain machine can work in soil encumbered with large stones, there digging must be done by hand.

Preserving Potatoes.—"J. L. M.," Van Buren, Pa. Potatoes will not keep through the winter if covered tightly in a keg or barrel. Holes should be bored in the barrel to give a circulation of air. When buried in the ground, they should not be put in tight kegs. In case a small quantity of seed is to be kept separate in a large pit, it should be put in an old basket or in a keg open at the top, and covered with some straw. The pit should have plenty of ventilation by means of plenty of straw placed in the top and brought into contact with the potatoes.

Clover Sod for a Market Garden.—"G. P. F." For a market garden next spring we would plow the clover sod early this fall, say in September, and cultivate the surface only afterwards until spring, when the clover will be decomposed.

Thrashing Machines.—"J. B.," Jefferson Co., Fla. The railway horse powers are perfectly safe to drive thrashing machines. With a safety brake, no harm can occur even should the belt break or fly off. All of those mentioned in the advertising columns are good machines. We cannot say which is the best. It would be better, perhaps, to write to each of the parties and procure circulars, and then choose for yourself.

Bommer's Method of Making Manure.—"H. C. K.," Mobile. There is nothing in Bommer's method as explained in his pamphlet on making manure, but what is practised by many good farmers who make composts of all the waste materials within their reach. It is simply a very good system of utilizing waste matters which are generally neglected, but from which a large addition to the manure pile may be made. The pamphlet is well worth study.

Chicken Cholera.—"G. W. H.," Douglas Co., Kansas, writes that he has found common "blue pill" to be a cure for chicken cholera, if given as soon as the fowls were first taken, but finds nothing of any avail for turkeys thus affected. We doubt if any means of cure can be depended on as effective. The cure comes too late, and prevention only will avail anything. This consists of great care as to the feed and water and cleanliness at all times. Half an ounce of sulphur for every dozen fowls given once a week in the feed is of great value.

It Pays Any One to study the advertising pages of a journal like this, where the eye is not offended by glaring announcements of medical nostrums and fraudulent schemes, and where every advertiser is believed to be a trustworthy man, having the *ability* and *intention* to do what he promises—for it is the aim of the publishers to admit only such advertisers, despite the fact that the excluded class would gladly pay much higher prices. They could afford to do so, for they give the least for the money they receive, and so can expend more in inveigling purchasers.....We know by experience that many business hints and suggestions are derived from studying the ways and modes of business adopted by others; and reading a lot of advertisements is like going into a "Grand Bazaar," where a multitude of dealers exhibit their wares. So we always advise our readers to go all through the advertisements of each paper, as they are usually changed materially in every successive number. As our advertisers are a select class, we like them to know that in this journal they meet with a wide-a-wake, enterprising class of readers, and so we make the standing request that those who write to them, ordering anything, or for circulars, or other information, would mention the fact that they are readers of this journal.

Hedge in Virginia.—Our Washington correspondent will find Osage Orange best for his purpose, and if he will write his name a little more plainly we will try to answer his other questions by mail.

Wooden Shoes.—Some years ago one of our editors who had lived long in Europe, where wooden shoes, or sabots, were in general use, wrote an article setting forth their utility, and suggesting that there were many cases in this country in which they would serve a good purpose. The idea struck Mr. E. W. Shippen, of Meadville, Pa., very forcibly, and he began to make wooden shoes. An American will always improve on the pattern given him, and the result of the whole matter is that there has been formed at Meadville a "Novelty Shoe Company," which turns out shoes combining all the good qualities of the rude, hand-made sabot, with—we had almost said a dancing pump. At all events the shoes made by them seem to be just the thing for those who have need of such an article, and they are good looking as well as serviceable.

A Nursery Agent is canvassing one of the western states, claiming to represent the Dingee Conard Co., of West Grove, Chester Co., Pa. As the chap offered peaches grafted on the "Wild Canada peach," which would be sure to bear every year and never be winter-killed, and other marvelous things, one of our readers wrote to know about the Company and the wonderful trees. Thinking the D. C. Co. would like to know of the matter, we sent the letter to them, and they write, "We do not employ any agents, and will endeavor to make it unhealthy for any one to make such representations in our name." Be on the look out for this chap.

American Pomological Society.—The great biennnial gathering takes place at Chicago on the 8th, 9th, and 10th of this month. Every member should endeavor to be present, and every fruit-grower who is not a member should become one. There is no exclusiveness about these meetings, and every one interested in fruit should be present. It is worth going a long distance to see the great number of distinguished pomologists this meeting will bring together, to say nothing about the fruit, the exhibition of which, held in co-operation with the Inter-State Exposition, promises to be something wonderful. For fuller details see July number, p. 252. The meetings will be held in one of the commodious halls of the Grand Pacific Hotel, the proprietors of which offer to deduct 50 cts. per day to those members who may take rooms there.—Young men "Go West."

Rivers' Early Peaches.—Since the article on p. 346, showing how these peaches have done in Georgia with Mr. Berckmans, was in type, we have received from Mr. Randolph Peters, specimens and notes on the behavior of some of the same peaches in Delaware and Maryland. That a peach should do differently in Georgia from what it does in Delaware is not at all surprising, and it is only by comparing the notes of growers in widely separated localities that we can come at the real value of a variety. Mr. Peters writes: "I have no hesitation in saying that the Early Beatrice is fully 10 days earlier than Hale's Early, tree vigorous and a profuse bearer. The Early Louise is about one week earlier than Hale's, the fruit much larger than Early Beatrice, and if it were as early, would be the more valuable of the two for market." . . R. S. Emery, of Chestertown, Md., of whose magnificent orchards we retain a pleasant recollection, writes: "I have fruited both the Early Beatrice and the Early Louise this season, and they are a perfect success, productive, free from rot, and ripening and coloring up beautifully." He says that Col. Wilkins' (one of the largest, if not the largest peach grower in Md.), 6-year-old trees are very fine, and quite fulfilled his expectations of them.—This matter of earliness is of the greatest importance to all peach-growers. The perishable nature of Hale's Early—hundreds of crates being sold early in August in the N. Y. market for 10 or 15 cents—makes it nearly worthless as a market peach. While Mr. Berckmans does not find the Early Beatrice with him, any earlier than Hale's, but better in every other respect, these Delaware and Maryland gentlemen find it much earlier than Hale's. We shall be glad of any other testimony as to these peaches.

WONDERFUL TOYS.—There seems to be no end of the resources of Mr. C. M. Crandall, in providing pleasant and useful amusement for children. All of his inventions have the advantage of developing ingenuity and constructive talent. None can predict the amount of architectural skill and mechanical invention, that will be exhibited by the growing generation, owing to the fact that so many of them possessed in childhood the Building Blocks, the Acrobats, the Menagerie, etc., of C. M. Crandall. All these blocks so fit each other, that their several parts can be combined in ten thousand ways.—A Supplement to this paper gives, on a very small scale, some two hundred of the countless thousands of combinations that any child can produce. The Acrobats were pretty widely disseminated last year, but probably few, except children of exceptional skill, found out a hundredth part of the combinations, of which the Acrobats are capable. The Supplement will furnish directly a good many new figures, and suggest many more.—P. S. Since the above was written, 25 cases of three dozen boxes each of Acrobats and other toys were started on the way to amuse children in France.

Basket Items continued on page 357.

An Agricultural Experiment Station to be Established at Middletown, Conn.

We take pleasure in announcing that at last a beginning is to be made in this country in the organization of those most useful and most important aids to agriculture known as Experiment Stations. In Germany, especially, and elsewhere in Europe, a large number, probably not less than seventy-five Agricultural Experiment Stations in all, have been established within the last dozen years, and their great utility is proved by the fact that the practical farmers are enthusiastic in their support; they see and feel the benefits conferred by them. Though we have something corresponding to them in a few of our colleges, especially in three or four agricultural colleges, in the Bussey Institution of Harvard, and the Sheffield School, of Yale; the one provided for at Middletown will be the first organized under the distinctive appellation of an "*Agricultural Experiment Station*" in this county, and Connecticut is therefore first in this particular field.

The Connecticut State Board of Agriculture, with other intelligent farmers of the State, have been agitating the subject for two years past, and have presented to the Legislature strong reasons for making an appropriation of $8,000 a year to support such a Station. But contrary to the general expectation, our own in common with others, it was found by June 1st that owing to the demands upon the Treasury for the new State House, now going up, and for the Centennial Exhibition at Philadelphia, as well as the determination of the dominant political party in the Legislature, to reduce appropriations to the lowest possible limit, there was no hope of securing the desired, and very desirable sum. Some thought it best to drop the subject for the time being, and trust to another Legislature to give what was needed; others thought it better to wait no longer on uncertainty, but to get the most that could be obtained, and make a beginning, and they set about the work. The Wesleyan University at Middletown having large laboratories, and abundant room to spare for the chemical department, in its new Scientific Building, offered the free use of them to the State. The Proprietors of the *American Agriculturist* offered $1,000 towards expenses, and under these circumstances the Legislature voted $5,600, $2,800 a year, payable in quarterly installments during two years. With this total sum of $6,500, and the free use of ample room and convenient laboratories—which could not be provided independently except at a cost of many thousands of dollars—and the aid proffered by the Middlesex Co. Agricultural Society, Middlefield Farm Club, and with the co-operation of the State Board of Agriculture, and other enterprising men, it is believed that enough will be accomplished to demonstrate the utility of such a Station, so that public opinion will compel more liberal provision hereafter, and also that it will lead to the organization of similar institutions in many other States.

The prominent idea of an Agricultural Experiment Station, is to have a central headquarters, of a semi-official character, *wholly in the interest of the people*, to which may be referred such questions as require the practical attention of intelligent, scientific, and practical men, entirely devoted to the business of careful experiments and investigations. For example, all the older States are flooded with artificial fertilizers, some of them good and profitable, others of uncertain value, and others largely fraudulent. Some are well and honestly manufactured until they obtain a good reputation, after which they are deteriorated. With a State Experiment Station in operation, farmers will naturally buy only those fertilizers which have been tested at the Station; and frequent analyses of samples of those actually sold will enable farmers to know whether they are getting what is purported to be sold to them. No farmer can, from the appearance of any fertilizer, tell whether it is a good article, or half, or two-thirds, inert material. The tests at the Station will decide the quality with great accuracy. The result will be that manufacturers and dealers in poor materials will give the Station a wide berth, and seek a market elsewhere, while honest dealers in first-class articles will seek a market there. Farmers will buy more freely when they can do so in confidence, to their own profit, and to the benefit of the whole State.

Again, there are in every State more or less of good marls, or other natural resources of fertility. No unscientific man can tell whether a substance is a worthless silicious deposit, or a calcareous or other valuable marl. A State Station can do much to seek out and test such deposits, and give valuable information to those who are in doubt as to the value of known deposits, and who hesitate to send samples for analysis when a large expense is certain, and the result to be obtained not always surely trustworthy.

There are hundreds of other questions which may well engage the energy, skill and science of those engaged in conducting an Agricultural Experiment Station, such as the value and best modes of using manures produced on the farm; relative value of various foods for animals, and the best combination or mixtures of them; best methods of preparing them by cooking or otherwise; detection of adulterations in oil-cake, cotton-seed cake, etc.; best period for getting hay, grass, and other green forage; poor seeds: difference in soils, and the crops and fertilizers best adapted to each; feeding for growth, for work, and for fattening, for milk, butter, or cheese; fruit culture; useful and destructive insects, as the potato beetle, army worms, etc., etc. All these and other topics are questions of practical interest, that require the highest practical skill and close, careful experiment and investigation, by painstaking, conscientious, scientific men—those above the suspicion of being in league with any dealers, and wholly devoted to the interests of the State which employs them. The results to be obtained, even on a small scale, cannot fail to be of great practical utility.

We regret that this first effort at Middletown could not have had abundant funds at the start to enter upon the whole field of experiment. No effort will be spared to make the means and facilities at its command go as far as possible, and we look for at least some good results, which shall be of benefit not merely to the State of Connecticut, but to the agriculturists of the whole country.

A House Costing $2,500.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans are for a full two story house, that will embrace the merits of the most economical form of construction, (having a floor measurement of 24x28, nearly square), with symmetry of style—

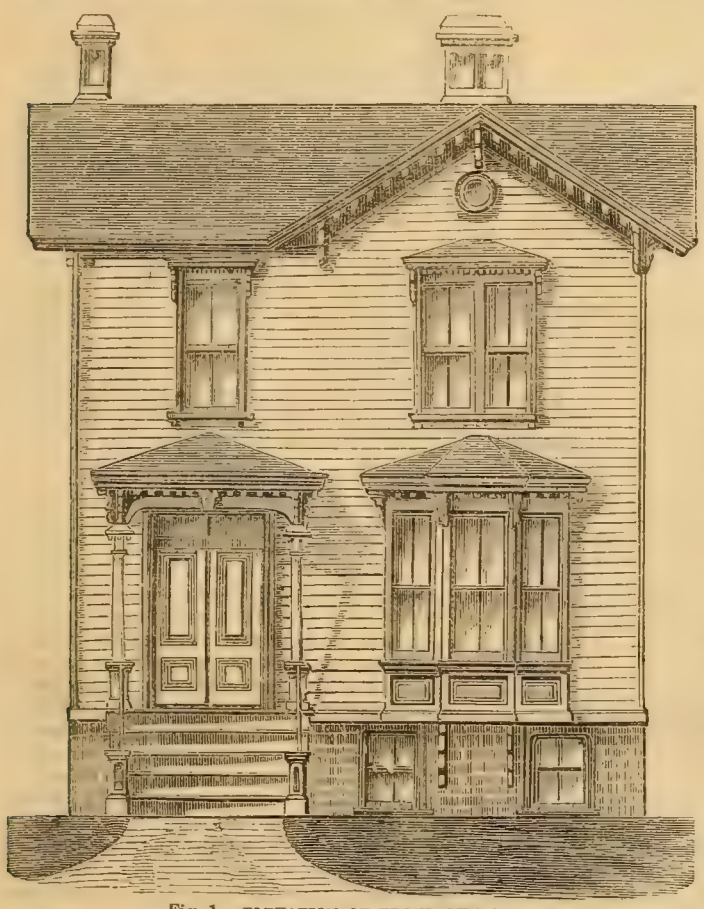


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

and comprising a very commodious and convenient interior arrangement. The **Elevation,** (fig. 1), has marked features of simplicity and refinement; with sufficient diversity of parts to give variety and grace, without pretentious display. We invariably recommend high foundations for houses of this character; of course a foot in hight at the bottom, will add a foot to the hight of the whole, imparting a better appearance externally, and on account of the better ventilation thereby afforded to the cellar, adds greatly to the healthfulness of the interior of the whole house. Additional steps will be required to the stoops, but the cost of these are compensated by deductions in the excavation for the cellar, and stone steps to the area. The large Porch, and double Doors, the Bay, and other Windows, each distinctive in themselves, and adapted to their places, similar only in conformity of character—are so proportioned as to harmonize with each other with pleasing effect. The pediments of the roof are so arranged that each "face" of the building will have very nearly the same appearance of outline. The main cornice projects two feet beyond the framework of the house, and is supported by large trusses; all other cornices, and window caps, have proportionate projections, insuring heavy shadows, giving relief and finish to the whole.... **Cellar,** (fig. 2,) excavations for this cellar are made 2 feet 6 in. below the general surface of the ground. The Foundation Walls, Chimneys, Girder Supports, and rear Area Walls, are built as described in the June number of the *American Agriculturist*, page 212, after which the earth is graded around, and up against the foundation, so as to give such slope as will turn the water away from the house and walks, leaving the foundation 4 feet above the final grade.... **First Story,** (fig. 3.)—This story contains the principal Hall, Parlor, Dining or Living-room, Kitchen, rear Lobby, three Closets, and private Stairs. The principal hall is entered from the front porch, through large double doors, is square (10 x 10 feet), and contains the principal stairs, which are built with a quarter circle, and niche, nearly in the center of their hight as described in the June number, page 212. This hall connects with the parlor through double doors; this will be found to give an impression of amplitude that would scarcely be expected in a house of this size. The parlor has a large Bay-Window, finished with elliptical arch, and ornamental corbels, and a marble mantel. The dining-room is intended as the living-room of the family, and communicates with each room and hall of the first story: has a closet under the front stairs, and has a marble mantel. The *Kitchen* is provided with large Range, two Closets, Sink, with cold and hot water, and closet underneath, and communicates with the dining-room, lobby, and cellar stairway. The rear entrance to this story is through the lobby, which has two small windows. The private stairs are arranged to start from the rear lobby.... **Second Story,** (fig. 4.)—The manner in which this story is divided into rooms very much resemble a "double" house, the hall being nearly in the center of the house, and the rooms at either side: contains Hall, two Stairways, six Rooms, and five Closets. The hall is 5 ft. 6 in. x 10 ft., and has 7 doors leading from it to the different rooms, and private stairway. Many persons require a "study"; the room directly above the principal hall is best adapted for such purpose, has a large closet, and is most convenient to the stairs. The door to this room should have ground glass upper panels, to admit light to the hall. The Bath-room is provided with French bath-tub, seat closet, and wash-basin. The soil-pipe from this story will be concealed by passing down inside one of the kitchen closets.

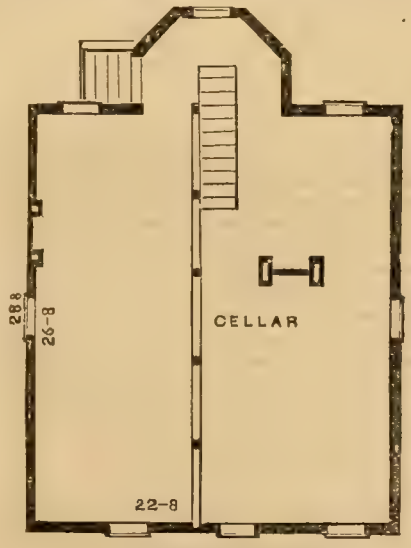


Fig. 2.—PLAN OF CELLAR.

Marble shelves, resting on stucco trusses, are intended for each of the four principal rooms of this story.... **General Details.**—It is intended that all work should be done in a workmanlike and substantial manner, of good materials as indicated in the estimate. All the principal timber is framed together, and raised in the usual manner, and secured with hard-wood pins. The Enclosing should be dressed, of thoroughly seasoned materials, and nailed with 10*d.* nails. The cornices are ornamented with bold paneled brackets, and dentil courses.

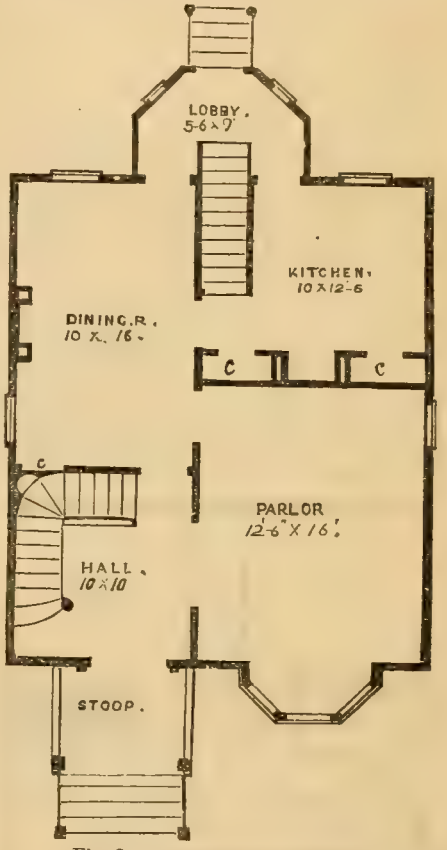


Fig. 3.—PLAN OF FIRST FLOOR.

Each gable is provided with a circular ventilator. All roofs are covered with charcoal tin, laid on rough boards, and have gutters as described in the May number, page 173, at a cost of 10 cts. per running foot. The columns of the front porch are turned, and have ornamental caps and square pedestals. The stoop-rail is five inches wide, and the balusters are scroll-sawed, of 1¼ inch pine plank. The trusses under the bay-window are large, scroll-sawed, and ornamental. The flooring should be thoroughly dried, close laid, and double nailed to each beam, with 10*d.* nails. While laying the floor, (having reached the center of the span of the beams), a row of cross-bridging should be put in, in a strong manner. In this way the *inequalities* of the upper surfaces of the beams, which are always more or less sprung, will be brought *into line* by the flooring, and each piece of bridging will receive its relative proportion of the weight. The tarred-paper is next inserted between the outside studding, in the manner described in the March number of the *American Agriculturist*, which is much cheaper than "brick-filling," and for many reasons more desirable. The central partitions that carry the principal weight, should be studded strongly of 4-inch materials, or wall-strips set edgeways. All closet, stair, and cross partitions, may be set of 2-inch materials, or wall-strips set flatways. This latter method saves nearly one-half of the space taken by the partitions, which may be added to the size of the rooms, where it frequently happens that a few inches becomes a matter of importance. The second story ceiling timbers are of wall-strips, put 12 inches from centers, and a flooring of rough boards is laid over a part, to make room for storage, etc. All sash are 1¼ inches thick, and have second quality French glass in them, and are hung with iron weights. We think there is a good opportunity for improvement in the manufacture of window sashes—making them air-tight, and suggest inserting the necessary rubber strips near their edges, and especially in the

lips of the check-rail—this would effectually shut out all drafts of air, and make the unsightly and impracticable "weather-strip" unnecessary. All stairs should have 1½ strings, and treads, and ⅞ risers, and should be so housed, glued, and keyed, as to make them solid; squeaky stairs are abominable, and even when assured of their safety, one feels an instinctive suspicion of danger, and will look for treachery in every part of the house. Black walnut paneled newel, molded rail, and fluted balusters, are intended for the principal flight of stairs. Setting the niche is a part of the stair-builder's work, and should always be included in his estimate for stairs of this character. The trimming of the hall, dining-room, and parlor, are of clear pine, the architraves are 8 inches wide, and "double-molded," with paneled back to each window. Base 7-inch and molded. All other rooms have 5-inch "single trim," with back molding, and base to match. All doors paneled and molded; all room-doors have mortice locks, and closet doors have rim locks, all with brass bolts and keys; knobs and escutcheons of porcelain, and all saddles are of hard wood. All parts of this house that are usually painted, should have two coats of paint of the best materials, and of such colors as shall suit the owner. All hard wood, such as the stair-rail, bath-room finish, and saddles, should have two coats of linseed-oil....**Cost.**—Contractors everywhere differ in

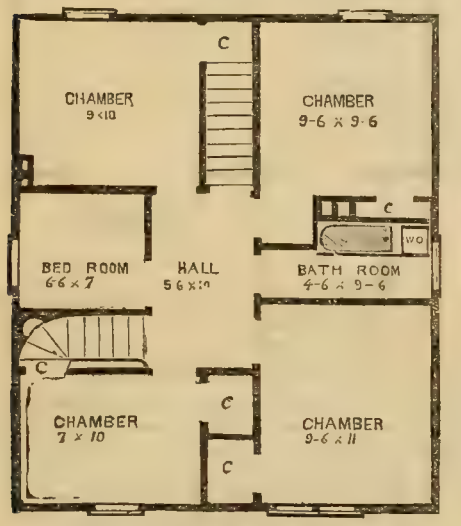


Fig. 4.—PLAN OF SECOND FLOOR.

their estimates for work of any kind. These differences are sometimes the result of some peculiar circumstance, but most generally they arise through some misapprehension of fact, either the plans are incomprehensible, or the description of them ambiguous, leading to a variety of interpretations, and consequently a variety of prices, some of which are too low, and some too high. The low man who usually *proposes* to do the best work and the most of it, gets the job, and executes the work in accordance with his preconceived ideas, gets his money, and leaves the owner in possession of something he did not expect. No one can know the extent and character of the work better than the projector of them, who should be equally qualified to give exact estimates of quantities, and cost of everything connected with their thorough development and execution, and thus truly fulfill his mission as the architect of the works. Cost is one of the most interesting features in any project, and no plan is hardly worth considering that does not comprehend in some way the expense of its execution. Builders, and others interested in such plans, will appreciate the detailed estimates, as furnishing the key to the whole plan, supplying the needed information as to the real quality and character of the work: *Estimate.*

62 yards Excavation, @ 25c. per yard	$15.50
13,000 hard Brick, furnished and laid, @ $15 ⅌ 1000	195.00
700 yards Lath and Plastering, @ 35c. per yard	245.00
32 feet Stone Steps, @ 40 c. per foot	12.80
24 feet Stone Sills, @ 30. per foot	7.20
2,300 feet Timber, @ 2¼c. per foot	51.75
viz. 2 Sills, 4x7 in. x 24 ft. long.	2 Plates, 4x6 in. x 24 ft. l'g.
2 Sills, 4x7 in. x 28 ft. long.	2 Plates, 4x6 in. x 28 ft. l'g.
4 Posts, 4x7 in. x 20 ft. long.	1 Girt, 4x8 in. x 28 ft. long.
2 Ties, 4x6 in. x 24 ft. long.	30 Beams, 3x7 in. x 24 ft. l'g.
2 Ties, 4x6 in. x 28 ft. long.	4 Valleys, 3x7 in. x 12 ft. l'g.
400 Wall Strips, 2x4 inches x 13 feet long, @ 16c. each	64.00
2,0 Novelty clear Siding Boards, @ 38c. each	8.40
175 pounds Tarred Paper, @ 5c. per lb	8.75
150 tongued and grooved Flooring, @ 38c. each	57.00
130 Hemlock Roof Boards, @ 20c. each	26.00
12 Squares of Tin Roofing, @ $9 per square	108.00
156 feet Gutters and Leaders, 10c. per foot	15.60
104 feet Cornice, @ 50c. per foot	52.00
1 Bay Window, with blinds, complete	75.00
12 plain Windows with Blinds, complete, @ $18 each	216.00
8 Cellar Windows, complete, @ $4 each	32.00
1 Stoop, (except tin as above,) complete	70.00
27 Doors, complete, @ $9 each	243.00
3 Stairs, complete	90.00
2 Marble Mantels, and 4 Shelves on Trusses	50.00
Range, Plumbing, Sink, Bath, Water Closet and Pump	300.00
Corner Boards, Base, and Shelving	32.50
Nails	20.00
Carriage, average one mile	30.00
Carpenter's Labor, not included above	250.00
Painting	100.00
Total cost, complete	$2,500.00

Science Applied to Farming.—IX.

BY PROF. W. O. ATWATER, WESLEYAN UNIVERSITY, *Middletown, Conn.*

Use of Concentrated or "Rich" Foods—Economy and Waste in Mixed Fodder—Nitrogen and Digestion.

In some experiments described in the April number, (Table 5), oxen fed with barley straw to which bean-meal was added, were able to digest about forty per cent of the straw. The bean-meal was rich in nitrogen, (albuminoids), and supplied the lack of this material in the straw. But if instead of bean-meal, they had mixed with the straw, starch, which contains no nitrogen, or some starchy ("carbonaceous") food as potatoes had been mixed with the straw, the result would have been very different. The starch, instead of increasing, might have diminished the digestion of the straw. The case may be put still more strongly. For instance, good upland hay contains much more nitrogen than straw, in fact so much that cattle will thrive upon it and digest all of its digestible material without the aid of any concentrated food. Clover is still richer in nitrogen. Mix with the hay or clover some albuminoid substance as gluten, or some materials rich in nitrogen as beans or oil-cake, and the animals will still digest them completely and without waste. But let the gluten be replaced by starch or "carbonaceous" foods, and much of the nutritious material of the hay or clover will pass off as excrement, which, with nitrogenous foods, or with no admixture, would have been digested. Now if a tailor cuts cloth and linings for a coat so as not to use all the material the patterns will allow, he wastes cloth. If a farmer so deals out food to his stock that part of the digestible material is not digested, there is likewise loss. There is a great deal of such waste in the ordinary feeding of stock, and much of this comes from not having sufficient nitrogen in the food to secure complete digestion. In the scarcity and costliness of hay and clover, farmers are coming to feel more and more the necessity of using oil-cakes, beans, peas, grains, roots, and other concentrated or "rich" foods. To know how to use these so as to make the most of them and of the coarser foods they are mixed with, is a very important matter.

This subject has been studied in a large number of feeding trials at the German Experiment Stations. As almost no detailed accounts of these have to my knowledge ever appeared in the English language, I will describe some of them. First, however, let me say that the experimenters find it necessary to distinguish between the more digestible foods as grains, roots, bran, oil-cake, etc., and the less digestible ones, as hay, straw, chaff, and green fodder. The former are called "concentrated" and the latter "coarse" or "crude materials." In order to unite these coarse and concentrated foods in fodder most profitably, it is important that the mixtures contain the right proportions of nitrogen, as has been explained and is shown by

Experiments on the Influence of Albuminoids and Carbo-hydrates upon Digestion.

These are generally made with oxen, cows, sheep, and goats. The plan is to determine how much they will digest from hay or clover alone by feeding these without any admixture.* The effect of albuminoids or carbo-hydrates on the digestion is learned by simply adding some nitrogenous substance as gluten, or non-nitrogenous substance as starch, and noting the result. Oftener, however, the more common concentrated foods are used instead of gluten and starch. Beans or oil-cake, for instance, are selected for nitrogenous, and potatoes for non-nitrogenous materials. If these concentrated foods are not of themselves completely digestible, due allowance is made for the substance they contribute to the excrement.

The albuminoids are found to be without effect upon, or to favor, digestion. The carbo-hydrates, tend to decrease digestion. And what seems very strange, it is chiefly the albuminoids and the fiber, (cellulose), whose digestion is hindered by the carbo-hydrates. This is illustrated by some experiments made with sheep by Shulze and Märcker, at the Station at Weende, in Germany. The animals (wethers) received during one period about 2 lbs. of hay, and during another, 2 lbs. of hay and ½ lb. of starch per head per day. Notice carefully the results in the figures below:

Table 15.

DAILY RATION FOR EACH SHEEP	Per cent of Ingredients of Hay Digested. Albuminoids.	Fiber.
2 lbs. Hay	54.1	60.2
2 lbs. Hay + ½ lb. Starch	31.7	54.3

Of every 100 pounds of albuminoids contained in the hay fed alone, the sheep digested 54 pounds. But when the starch was added, they digested only 31⅞ pounds. So from every 100 parts of crude fiber of the pure hay, the sheep digested 60⅕ parts. But when the starch was added they digested only 54¼ parts (per cent). The effect of the starch then was to decrease the digestion of the albuminoids by over 12.4 per cent, and that of the fiber by not quite 6 per cent. And this decrease was not due to the starch making the ration larger than they could economically dispose of. For during another period, ½ lb. of gluten was fed with the hay in the place of the starch, and then they digested not only all the gluten, but just about as much of the hay as when nothing was added.

Here are some more experiments in which potatoes instead of starch, and clover instead of meadow hay, were employed. They were made with sheep at Hohenheim, by Dr. Wolff. Two series were performed, marked A and B.

Table 16.

DAILY RATION FED TO EACH SHEEP.	Out of every 100 lbs. of the following substances contained in the clover, the animals digested the number of pounds set under each, viz.: Albuminoids.	Crude fiber.	Other Carbo-hydrates.	Rates of digested Albuminoids to digested Carbo-hydrates.
SERIES A.	lbs.	lbs.	lbs.	
2 lbs. clover alone	63.7	51.2	67.4	1 : 4.3
2 lbs. clover + 2 lbs. potatoes	57.7	48.4	65.9	1 : 5.2
2 lbs. clover + 4 lbs. potatoes	50.5	45.5	62.8	1 : 6.0
1 lb. clover + 4 lbs. potatoes	45.7	43.3	61.3	1 : 6.6
1 lb. clover + 6 lbs. potatoes	46.4	41.8	60.5	1 : 6.8
SERIES B.				
2 lbs. clover alone	65.0	50.1	74.6	1 : 5.9
2 lbs. clover + 2 lbs. potatoes	56.5	50.1	66.1	1 : 6.8
2 lbs. clover + 4 lbs. potatoes	37.6	47.2	64.5	1 : 9.4

Now look along down the column of albuminoids and crude fiber, and notice how the potatoes decreased the digestion of these in the clover. In *A*, with no admixture, out of every hundred parts of albuminoids, 63⁷/₁₀ parts were digested. With 4 lbs. of potatoes added only 50½ per cent, and with 6 lbs. of potatoes only 46²/₅ per cent were digested. So with the fiber, 4 lbs. of potatoes reduced the digestion from 51½ to 45½ per cent. Notice now the series *B*. The potatoes have again decreased the digestion of the albuminoids and fiber of the clover. With 4 lbs. of potatoes, the digestion of albuminoids falls from 65 to 37⅘ per cent, and that of fiber from 50 to 47⅕. The decrease is greater than in *A*. The effect of the potatoes is worse than before. Why is this? We saw that starch decreases digestion, and that albuminoids either act indifferently or aid it. If this be true, then of two kinds of potatoes the one which contains the less nitrogen and the more starch, ought to reduce digestion the

* For explanation of these digestive experiments see No. IV of these articles, in April *American Agriculturist*.

more. Such was exactly the case here. The potatoes in *B* had less albuminoids and more starch than those in *A*. In *A* there were 6, and in *B* 9 lbs. of carbo-hydrates to 1 of albuminoids. The less the nitrogen in the concentrated, the greater was the loss in digestion of the crude food.

But to establish this principle firmly, one more proof is needed. Nitrogenous food in the place of potatoes ought to bring the digestion up again to where it was before the admixture. Fortunately this precise point has been tested. I have not space to give the experiments now. Suffice it to say that when bean-meal was added to hay in both small and large quantities, there was no decrease in the digestion of the hay, and when, again, part of the bean-meal was replaced by starch, the digestion of albuminoids fell once more. Just as we are getting fairly into this question, I find that my allotted space is about filled. So I will only add a few words to indicate

How these Principles may be Applied in Practice.

1st. To make good use of poor foods, add rich foods to them.

2d. To economize in feeding, see that the fodder contains plenty of nitrogen. And this for two reasons, because stock cannot digest their food completely without it, and because they need albuminoids for their nutrition.

Wagons and Wagon Manufacture.

A farm wagon that is ill-made, is a source of much annoyance, and loss of money and time. Unseasoned timber, and iron of poor quality, when put into a wagon, cause more trouble than when put anywhere else upon the farm. The most skillful workmanship is thrown away upon poor materials, and putty and paint may cover but can not conceal them. The necessary exposure to the weather, and the strain of hard work, soon opens the joints, and admits water and air, and a poor wagon soon becomes a hopeless wreck. The business of wagon making is a very important one, both as an industry in which many workmen and large capital are employed, and also to the farmers and others who purchase the vehicles. The bulk of the business of building farm wagons, is done in large factories in the western states, in which about 55,000 of these vehicles are made yearly. In these factories, which are furnished with large capital, and managed with extreme skill, every advantage as regards excellence of material and of labor is enjoyed. The lumber is selected with great care, and piled up in sheds, where it remains two or three years to season thoroughly. It undergoes no less than six inspections before it finds its place in the finished wagon. Equal care is taken in the selection of the iron. These precautions are absolutely necessary, to enable the wagons to sustain the heat and dry weather; many of them going on to the plains, to the mining regions of the mountains, to Mexico, California, and to Texas, besides to thousands of farms in the west and east. Those wagons destined for California, are made with boxes from three to six feet deep, and with much more iron about them than a farm wagon. The California people are very exacting as to the style of their wagons, requiring more than thirty different kinds. The best hubs and spokes are brought from northern Wisconsin; oak and ash for other parts, from Michigan; and hickory from Indiana. Wagons made with such care and of such materials, will out-last inferior ones many years, and are very much the cheapest in the end. As might be expected, the manufacture conducted in this manner, grows very rapidly. The two largest of the western factories have both grown from small beginnings in a few years, up to very extensive establishments. Of the "Whitewater (Wis.) farm and freight wagon," made by Semple, Birge & Co., of St. Louis, 200 were made in 1860. Last year 4,500, or 15 every day, were made. Of the "Mitchell" wagons, made by Mitchell, Lewis & Co., of Racine, Wis., 6,000 were sold last year, and this large business has grown up in twenty years. A farm wagon constructed of the same materials, and in the same manner as a freight wagon, destined to traverse the hot dry plains and the roughest mountain roads, may well be considered as the best of its kind. The fortunate owner of such a wagon ought certainly to do it the justice of sheltering and cherishing it with the greatest care.

Ogden Farm Papers.—No. 67.

BY GEORGE E. WARING, JR.,

There is some progress to report in connection with the swamp that is being drained in Massachusetts. The mill was erected with a pump four inches in diameter, having a five-inch stroke. This worked perfectly well, even in very light winds, but its capacity was far too little to produce a sensible effect on the volume of water with which we had to contend, and I substituted for it a home-made wooden pump, eight inches square in the clear, and throwing over a gallon of water per stroke. I had no question but that the windmill, (twelve feet in diameter), would manage such a pump perfectly in a fair wind, and the situation was such that a working wind might be depended upon for a large part of the time. I visited it a few days ago, longing during the whole journey for a strong breeze to come up, but the ponds were only slightly rippled, and I had no hope of finding the machinery in operation. As we drove through the woods toward the swamp, there was hardly more than a rustling of the leaves at the tops of the trees, and I expected to turn the wheel by hand to see how the pump held its water. As we came out into the open, I was surprised to see the mill turning deliberately but steadily, (making only twelve strokes per minute, which, for a mill of that size, is very slow work.) We found that every stroke delivered its full measure of water, and that, at each two revolutions of the wheel, an ordinary wooden bucket was filled. While we remained there the wind increased a little, so as to raise the speed, at its best, to eighteen strokes per minute. At these low velocities there was no appearance that the large quantity of water being thrown was in any way a tax upon the working of the mill, and in order to test it more thoroughly, I put my whole weight, (hard upon two hundred), on the pitman, and found that the movement was continued without a sensible reduction of speed. This demonstrated that, with such a breeze as was then blowing, this twelve-foot mill and its pump would raise a barrel of water per minute from a depth of at least eight feet, and that, of course, with any increase of force in the wind, the depth might be greatly extended. It is therefore not unlikely that even if we have to go to a depth of fifteen feet, which is the worst that we have contemplated, we may still be able to use a pump of this size; though no doubt, after the land has once been pumped dry, the amount of water to be thrown could be handled by a much smaller pump. I have gone thus far into detail in this matter, and shall continue to do so as the project develops, in the belief that more real benefit accrues to readers from accounts and discussions of work that is actually being done, than from any amount of purely theoretical discussion of principles and processes. This is the first instance, (within my knowledge), in this country, of attempting to drain a considerable swamp by the use of a wind-mill. If it succeeds, the details of the work will have a wide interest, and even if it fails in any or in all respects, it must at least be full of valuable suggestion for others who have similar work to perform; if we teach only what is to be avoided, we teach a great deal.

My senior partner originated an expression, during our earlier days, when so many of our operations went awry, the force of which many beginners will realize: "There is nothing sure in farming but disappointment."—Although we have learned much patience during our eight years of experiment and frequent failure, and have survived the many difficulties which beset us at the outset, we are constantly achieving some new surprise, and realizing that the fund of experimental knowledge that a farm supplies is not easily exhausted. Just as we had flattered ourselves that we had gone through the whole list of agricultural calamities, and had nothing more to learn, we were visited one fine day by a cloud of army worms. Judging from the vigor and the methodical industry with which they have begun their operations, we shall probably have occasion to remember them as long as we live. Almost before we knew of their coming, five acres of oats which were in about a week to have been turned into hay, (as soon as the kernel should develop its milk), was almost black with them, and before we could get the mowing-machine through the field, and the crop spread out to dry, nearly every leaf had been eaten, and only the heads and stalks left. The next morning another tribe were found at work at the edge of a patch of corn-fodder, which was to have made us butter in August and September, and was to have given us a good row of stacks for forage next winter. Oddly enough, (though perhaps this is the way with the beast), they had confined their operations to the first row of corn, which was rather well grown, but they had reduced it to bare poles, ragged with the strings of the leaves, which had been too tough for their use. Six hours later the next row had followed, and by the next morning the third was being assailed. We then adopted the tactics of our neighbors, learned during the previous inroads of this pest, before I came here to live, and cut a trench a little way in from the edge of the sound corn, a good spade deep, and with steep sides. This seems to have checked their advance, and will, I hope, prove effectual; but if not, there will be cows sold this autumn, or a good deal of money spent for fodder; for, with the months of May and June, very cold and very dry, our hay crop is considerably reduced in quantity. Not so much as the crops of adjacent poorer lands, but still quite seriously. Our neighbors say that this ditch, if watched, and kept steep in the sides, will be effectual; that the worms, in attempting to get out of it, divide their energies between pulling themselves up and pulling their neighbors down, and so keep themselves at the bottom. Let us hope.

I really begin to feel as though whenever I take up the subject of the deep setting of milk, I were entering upon the career of a confirmed bore. Every time I touch it I determine never to speak of it again, yet there is always something developing that seems to add to the importance of the topic. I had been quiet about deep cans for some months, and had contented myself with publishing the reports of its success that so frequently reached me, when suddenly there burst upon me a violent article, (in the Country Gentleman), from the pen of Mr. O. S. Bliss, Secretary of the very prominent Dairymen's Association of Vermont. Mr. Bliss courteously intimated that I and those who believe with me, were either humbugged ourselves or were humbugging others; or, in plain English, that we were either knaves or fools. Not supposing that he meant it, I wrote a mild reply, to which he retorts, saying, in effect, that I am not only either a knave or a fool, but that I prefer opinions to facts, and that I avoid making a comparative trial for fear of exposing myself. While I was considering how to repel this onset, Mr. F. D. Douglass, of Whiting, Vermont, a man well known in the dairy world, takes up the cudgel against Mr. Bliss, and makes it quite unnecessary to say any more. He points to the fact that we who advocate deep-setting have no pecuniary interest in the general adoption of our ideas, and have not a solitary patent-right to sell. In the course of his remarks he delivers the following: "With regard to the arraignment of the advocates of deep-setting in general, I have nothing to say. These gentlemen will doubtless continue to practice their abominations in spite of this, and stubbornly refuse to profit by his profound lessons of wisdom drawn from his great experience in conducting his dairy of one cow."—Mr. Douglass goes on to say that his pecuniary success depends largely

upon his dairy, and that he intends to conduct his operations in the manner which gives him the largest profit; that, hoping to profit by the criticism and experience of others, he has watched eagerly to have the errors of his system pointed out; he has utterly failed to find anything in the comments to which deep-setting has been subjected that in any way shakes his faith in its merits.

The editor of the *Agriculturist* forwards to me the following letter, from "C. J. B.," Rensselaer, Ind.

"Having a little milk to handle, I was much troubled to decide how to do it, but from reading the *Agriculturist*, and especially Walks and Talks on the Farm, I decided to try the deep-can system, and am thus far well pleased with the (to me) experiment. I have a vat 22 inches wide, 20 inches deep, and 10 feet long, set near the well; have a wind pump, and the water runs from the pump to the box, and from that to a tank for stock. The vat is protected from the sun by a cheap shed, all temporary, but answering a good purpose. Have kept milk sixty hours, perfectly sweet, in very unfavorable weather. My vat will hold the milk and cream from twenty cows. I get, on an average, about 2½ inches of cream to the can, and some of my cows are very poor for butter. I consider over one-half of the labor of handling milk is saved.

"I had thought of trying the 'Jennings' pan, but the patent right for the privilege, (one dollar per cow), would cost me as much as all our present fixings and cans. I find a great advantage in the milk being kept sweet for both pigs and calves, especially for the latter."—Readers will please not charge my friend of "Walks and Talks" with being engaged in this humbug.

Referring to the last number of these papers, I have to say that further consideration has modified my plan for using our liquid manure. I find that the drain from the bottom of the cellar delivers so far down the hill as to reach considerably less land than if it flowed from the surface of the ground adjoining the barn, I have consequently arranged to build a stone tank, holding about five thousand gallons, under a shed at the rear of the barn, some seven feet higher than the present drain. This will enable us to irrigate about twenty acres more land, an advantage that will well repay for the extra work of lifting the liquid seven feet higher. Another modification is in connection with the use of the tilting-box illustrated last month, which is now so arranged that this shall be brought into operation only when needed to throw in the extra volume of water required to start the siphon. The accompanying illustrations show how it is proposed to arrange this. The trough, *b*, will ordinarily deliver its flow directly into the tank, but when the water rises high enough to float the cask, *f*, the rising of this will tend to push the mouth of the trough sidewise to *a*, so that it shall deliver into the tilting-box, *e*. The solid lines show the position to which the float falls as the liquid is lowered by the action of the siphon, and the manner in which this falling draws the spout back so that its delivery shall be no longer into the tilting-box. The dotted lines show how the rising water raises the float and moves the spout, so as to deliver into the tilter. The spout, being hinged at one end and hung from the ceiling at the other, will swing easily. This arrangement will prevent the useless working of the tilter during the filling of the tank, so that it will remain much longer in order for its legitimate work. This improvement is now being put in hand and the result will be reported after we have had sufficient experience to indicate what changes may be necessary.

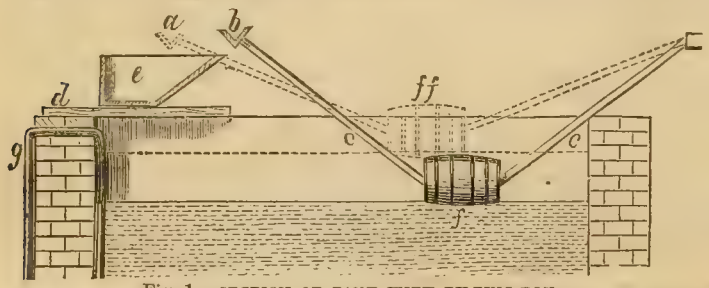


Fig. 1.—SECTION OF TANK WITH TILTING-BOX.
a, trough when the liquid is high; *b*, same when low; *c*, *c*, levers; *d*, support for tilter; *e*, tilter; *f*, cask at low level; *ff*, cask raised; *g*, siphon.

This method of raising liquid manure, or a small or irregular supply of water, and accumulating it in sufficient quantity for satisfactory use in irrigation, is applicable to a number of circumstances. Frequently the power of a running stream might be used in the place of a windmill for the lifting, and in very many cases there is sufficient natural fall between the barn cellar or a liquid manure vat in the barnyard for a siphon tank to be filled by natural flow. In such cases we have only to provide in some way, either by the turning of rain-water into the cellar, or by diverting a natural stream so as to fill it, to increase the quantity of liquid manure, and become able in this way to manure a considerable area. It is hardly worth while at this stage of public opinion on the subject of irrigation to advance any arguments in its favor, for it is well known by all who have given attention to the question, that the regulated flooding, especially of grass land, by even pure water, is one of the best means by which art attempts to increase the productiveness of the natural soil; that there is no easier or safer means for spreading manure than its distribution and dilution in water; and that while pure water is very valuable, up to a certain point, the more manure it contains the better is its effect. It is only necessary to have a natural or artificial source of water so arranged that it can be brought into the cellar or other receptacle of the manure, and that, after it has dissolved more or less of the fertilizing contents of the deposit, it may be made to flow, periodically, in such volumes as will carry it to the desired point without much loss from soakage by the way. The chief point of value of what has been said in this article and the preceding one is the description of the use of the siphon tank, which operates automatically, and is not dependent on the memory and attention of man to secure its proper action.

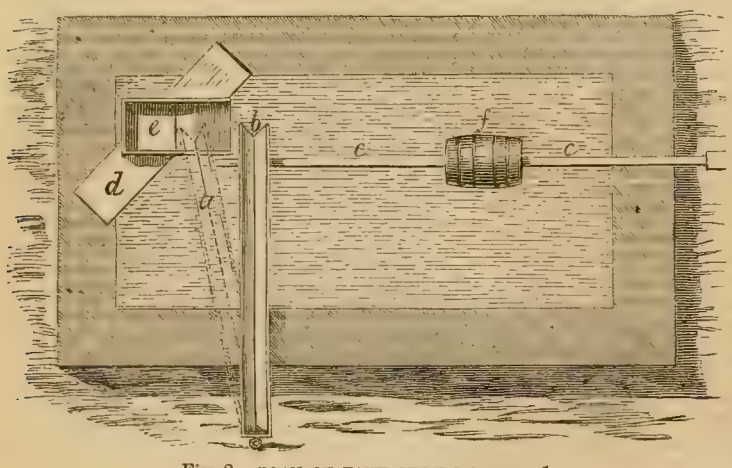
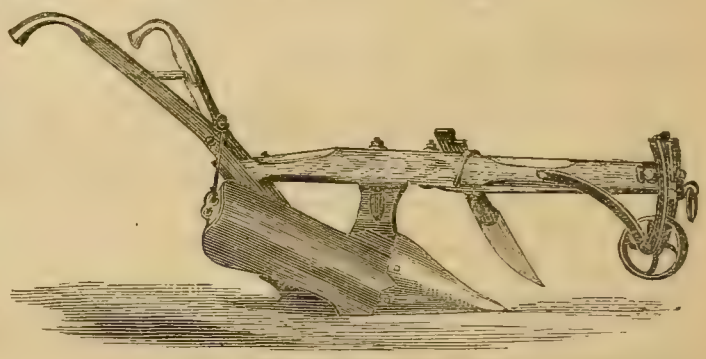


Fig. 2.—PLAN OF TANK SHOWN IN FIG. 1.

Flat Plowing.—The Higganum Plow.

The general use of mowing and reaping machines, renders it necessary that the surface of a field sowed in grain or laid down to grass, should present an even level, without ridges or open furrows. It is impossible to do this with the common plow, without much loss of time, or without plowing around the field, which is both difficult and objectionable. To meet this want, the principle of a swinging mold-board and share, which has long been used upon the "side-hill" plows, has been adapted to plows for level land. These have been called swivel or reversible plows; the latter name being the most appropriate. Various kinds of these plows have been already mentioned and described in the *Agriculturist*, and we now illustrate an improved plow of this kind, made by the Higganum Manufacturing Company, of Higganum, Ct. This plow has some special advantages. One of the difficulties heretofore experienced in using a plow of this kind, has been that in plowing sod, the coulter could not be brought into the proper position with regard to the point of the share, without adjusting it at each "bout." In this plow this trouble is obviated by means of the swivel-angle, upon which the share swings, being less than a right angle. This causes the point of the share to coincide with the point of the coulter, upon whichever side of the beam the share may be. Another improvement in the form of the mold-board, enables the plow to run deep or shallow, and do equally good work in either case. The plow may also be adjusted to different widths of furrows, and is provided with an elastic and adjustable draft-rod, which, when obstructions are met with, prevents breakage. In using these plows, the necessary extra weight of the mold-board and standard, adds but little to the draft, and is compensated many times over in the saving of time and the distance traveled in going about the head-lands in ordinary plowing. Our method of using these plows, is to find the center of the field, or to divide the field into a few or several wide lands of even width from end to end. Then in the center of the field or the land, we turn a very light furrow, flat; and passing back through the same furrow, cover the sod with some loose soil, we then proceed back and forth until half the field or land is plowed, when the other half is finished. Another way is to commence at one side of the field, and throw a light furrow towards the fence, and gradually deepen the next furrows, until the full depth is reached. Then plow back and forth until the whole field is plowed. The horses walk alternately in the furrow and on the land, thus resting the team. As a portion of the field is plowed, it may be harrowed and sown while the ground is fresh and mellow, which frequently makes a great difference in the after condition of the crop. For stubble plowing exactly the same methods are used. We have found the soil to be left in an excellent condition after these plows, so much so, that it is fit to be sown or planted without previous harrowing.

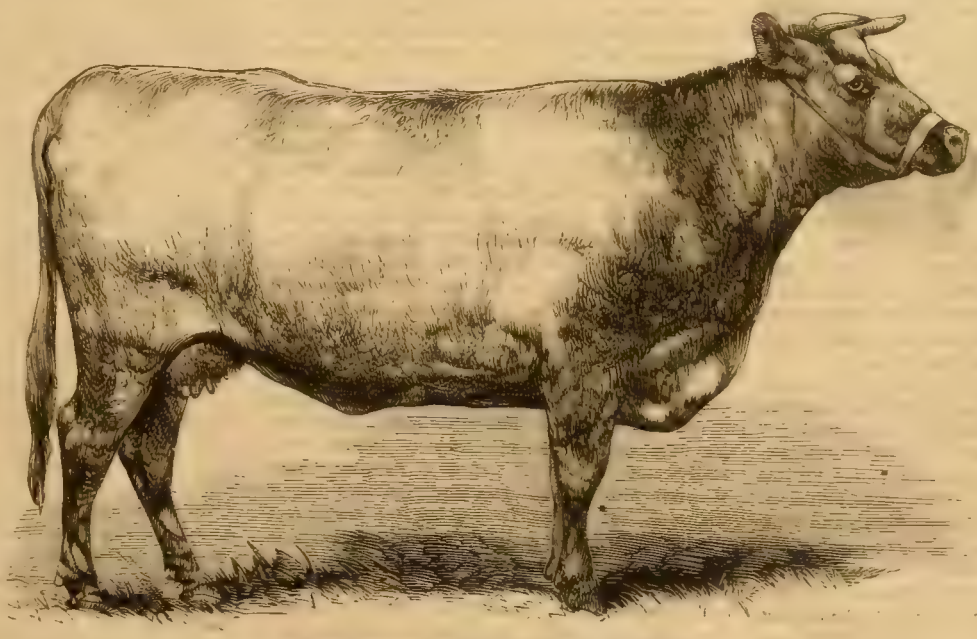


THE HIGGANUM REVERSIBLE PLOW.

The 10th Duchess of Geneva and Calf.

About two years ago the famous sale of Short-horns at New York Mills, near Utica, N. Y., took place. The prices obtained for some of the stock at this sale have never been surpassed before or since. Yet it is probable, considering the high prices even now obtained for noted individuals of the Duchess family, the same animals that were then sold at such extreme figures, would again realize equally high prices if brought to sale once more. The cow which brought the second price, $35,000, at the sale in Sept. 10th, 1873, was the 10th Duchess of Geneva. At the time of the shipment of this cow to Underley Park, England, the home of her purchaser, the Earl of Bective, various portraits of her, drawn in the present fashionable style of art, were published. Of course, no person could form any opinion of the true merits of the cow from those portraits. We are able to give in the accompanying engravings, a copy of a photograph of this noted cow, with one of her last calves, the Duke of Underley. The photograph was originally published in the London Agricultural Gazette, together with copies of paintings, taken from life by Mr. A. M. Williams, a capable English artist. The photographs and copies are published by permission of Lord Bective, the owner of the cattle. They may, therefore, be accepted as being entirely satisfactory in all respects. There is here, as well as in England, a disinclination on the part of breeders to have photographs of their stock published. They claim that the figures of the animals are distorted in the process of photographing. To some extent this is true, but a good photograph shows the animal very much more life-like than the usual drawings put forth by the owners as portraits, in which distortion is often carried to the excess of absurdity, and any fair judge of stock could readily form a nearly accurate idea of the animal from a good photograph, when he would utterly fail to do so from such a portrait as is now in favor amongst breeders of fashionable stock. The portraits here given represent two really beautiful animals. The 10th Duchess is seen to be exquisite in form and shape, of extremely feminine appearance, and a worthy representative of her high bred and justly noted family. Her calf (shown at 10 months old) partakes much of the character of the dam, and promises to become a valuable bull. His owner, it is said, has refused 3,000 guineas ($15,750) for him already. The chief point of value in the 10th Duchess was held to be her power of reproducing her own character in her progeny, and it is very certain that in this case that natural gift has been well developed. We should rejoice if some of our prominent breeders could be brought to see the propriety of representing their animals as nearly as possible as they are by means of carefully executed photographs from life, instead of by fancy drawings. We should be glad to lend our aid to popularize in this manner a correct knowledge of the merits of our valuable stock, knowing full well of what importance to the general agricultural interest it is to have these merits widely known and recognized. The examples before us certainly show in a remarkable manner that the true merits of the stock can lose nothing, but can only gain by the use of the photograph in place of the fanciful art of the draftsman. Disappointment and suspicion is felt by the farmer, who has known the stock only through the portraits, when he discovers that they are not unlike ordinary cattle.

SHORT-HORN CALF—DUKE OF UNDERLEY.



SHORT-HORN COW—10TH DUCHESS OF GENEVA.

What Labor-Saving Machines are Wanted.

The next great want in the way of agricultural machinery is a corn-harvester. To cut the whole of our immense harvest of corn by hand, one stalk or hill at a time, is as rude as the old-fashioned way of reaping wheat with the sickle. The sickle and the corn-knife ought by this time to hang together as relics of a bygone age. Perhaps we are too exacting in regard to what a corn-harvester should be. Used to the present highly finished and effective reapers, we look for an equally effective and finished corn-harvester, forgetting that the first reaper or mower was a very different machine from our present models. If a machine can be made to cut corn at all, it will be an improvement upon our present costly method. Designs for such machines are in existence, and more than one inventor has clear ideas of methods by which the work may be done. We cannot expect mechanics and inventors to work from motives of philanthropy. That does not supply bread nor purchase clothes. If it is likely to be profitable to make a corn-harvesting machine, it will be made. But it is the first step that costs. If some of our agricultural societies would offer a sufficient premium for a corn-harvester, even though it may not be a perfect one, or several prizes, graduated according to the merits of the machines offered, we think several would be presented for competition. When several machines were thus brought together, their defects would be discovered and remedied, and improvements would follow, as they have always done in similar cases. The need just now is not so much a machine that farmers will rush to buy, as they would a perfect one, (for that is impossible at present, and will require much previous experiment and cost), but to have a machine that will cut corn cheaper and as well as it can be cut by hand, and this does not seem to be a difficult thing to do. Then we need a corn-husker that shall strip the ears and husk them perfectly under all conditions, as well as a machine that shall pass through the standing corn and gather and husk the ears, leaving the rest upon the ground to be eaten by stock or plowed under. We also need an attachment to the grain-harvester, that shall bind the sheaves with cord and not with wire, a cotton-picker, a flax-puller, and several other labor savers. The inventive ingenuity that has been able to construct machines that make nails and tacks, all kinds and sizes, from bars of iron; that puddle iron, and make needles or railroad bars; that plait figured tapes and weave damasks, and that tie knots in tightly stretched cords, as in making weavers' healds, should be able to furnish farmers with all the machinery they want. To have such machines, all that is requisite is that farmers should make it profitable for others to invent them.

Value of Cotton-Seed Cake.—In the refuse of our cotton crop we possess a most valuable food material. The cotton-seed, now almost wholly a waste product, and used without economy as a manure, contains, without the husk, from 30 to 40 per cent of oil, and after the oil has been expressed, the residue consists of 16 per cent of oil; 41½ per cent of albuminous matters, which contain nearly 7 per cent of nitrogen (equal to more than 8 per cent of ammonia); 16½ per cent of gum, mucilage, and other carbonaceous matters; 9 per cent of woody fiber, and 8 per cent of ash, which is rich in phosphoric acid and potash. There is also about 9 per cent of water. The large proportion of fat contained in the oil-cake makes it a valuable food for stock in winter, or for fattening cattle. Most of the large proportion of nitrogen, potash, and phosphoric acid, it contains, is left in the manure, rendering it almost as valuable in this state as it is for feed. Dr. Voelcker estimates the manure made from a ton of it to be worth $30. When fed to young stock, the nitrogen and phosphoric acid are utilized by the young animals to a greater extent than when fed to adult stock. In feeding it, the

greatest value is secured. When used as a fertilizer in its raw state, the oil is lost, but the other matters are utilized. But there is a waste in using it whole, and a saving if ground or crushed into coarse meal. An experiment made with 5 bushels of crushed seed, composted with lime, and applied to an acre of corn, produced 30 bushels of grain, while 5 bushels of rotted whole seed produced only 19 bushels. The labor of crushing, therefore, was repaid by 11 bushels of corn.

Walks and Talks on the Farm.—No. 141.

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Dr. Harlan, Wilmington, Del., has compiled a table showing the amount of nitrogen in a ton of different crops, as compared with some of our standard fertilizers. It is as follows:

	Nitrogen in one ton.
Hungarian Millet, in blossom	20 pounds.
Green Clover	12 "
Green Rye	11 "
Barn Yard Manure	10 "
White Mustard	9 "
Green Buckwheat	8 "
Green Corn	4 "
Turnips	4 "
Ground Raw Bones	100 "
Peruvian Guano	280 "
Nitrate of Soda	300 "

"Now that we know the value of these green crops," writes the Doctor, "what shall we do with them? Shall we plow them in for manure, and thus save all the nitrogen, or shall we feed them to animals, and lose one-half or three-fourths of this most precious and most costly constituent of the food of grain?"

There is no necessity for losing one-half or three-fourths of the nitrogen. We lose one-half or more of the carbonaceous matter, but not more than 10 per cent of the nitrogen—often not more than two, three, or five per cent.

Dr. Harlan quotes me as saying "a ton of corn-meal contains 36 lbs. of nitrogen, worth at 25 cents a pound, $9.00."—"Now," remarks the Doctor, "I can take a ton of corn and sow it on 15 acres, and have 675 tons of green manure, all evenly spread over the field, and worth for the nitrogen in it, $675. That is, for the same amount of grain that he gets $9 worth of manure by feeding cattle, I get $675 worth by feeding the land!"—This sounds well. The Doctor "feeds" the land with 36 lbs. of nitrogen, and the land returns back 2,700 pounds. Put a dollar in your pocket and pull out five hundred dollars. You can do it. It is an easy matter. All there is to it, is to have $499 in your pocket to start with. But I would not advise a young man to build his hopes of gaining a livelihood on such a process. There are some young men whose pockets are not well lined with greenbacks. This plausible plan of putting in one dollar and pulling out five hundred, will not work well in their cases. If Dr. Harlan has got 15 acres of rich land, well drained, and in high condition, he can doubtless sow a ton of corn on it, and get back 675 tons of fodder. He can sow 36 lbs. of nitrogen, and get back 2,700 lbs. He can put one dollar into his pocket, and take out five hundred.

"I had," continues the Doctor, "27 tons of green buckwheat per acre, and in this way obtained available nitrogen for a trifle over one cent per pound; yet you cannot buy it in stable manure, guano, nitrate of soda, or in ground bones, for less than 25 or 30 cents per lb."—What an easy thing it is to make land rich! Sow buckwheat, and plow under a crop of 27 tons per acre, containing 216 lbs. of nitrogen. You can raise two crops a year. Keep doing this a few years, and what rich land you would have! Put in a dollar and take out five hundred, and keep on doing it, and you will soon be richer than Vanderbilt.

But to be serious. You take an acre of land and sow it to buckwheat. You get a splendid crop, 27 tons, containing 216 lbs. of nitrogen. You plow it under and sow it to buckwheat again, and plow under a similar crop in the fall, also containing 216 lbs. of nitrogen. The next spring you sow corn-fodder. You get a grand crop—45 tons per acre, containing 180 lbs. of nitrogen. This you also plow under in September, and sow winter wheat. You get a noble crop of wheat, which, if allowed to ripen, would give 50 bushels of wheat and 2½ tons of straw per acre. Such a crop contains 86½ lbs. of nitrogen. You plow it under and sow turnips afterwards. You get 15 tons of turnips, containing 60 lbs. of nitrogen. And now what have you gained? How much richer is that acre of land than when you started? How many more pounds of nitrogen does it contain?

But is not the nitrogen in a better or more available condition?—No. It is precisely the other way. What we mean by "available nitrogen," is nitrogen in the form of nitric acid and ammonia, or in some such form as urea, or uric acid, which readily ferments and becomes available. Organized nitrogen in green buckwheat or corn-fodder, is not "available nitrogen." The crop must decompose before the nitrogen becomes available as plant-food.

But I see the Deacon has gone to sleep. And in truth I do not blame him. I am somewhat tired of the subject myself, until we get more light upon it. It is one of vast importrnce, and I desire to thank Dr. Harlan for his table and for his statements of the yield of corn-fodder and buckwheat. I hope he will continue his experiments. There are vast sections of poor sandy land, where green manuring seems to be the only available means of getting the soil rich enough to produce paying crops. Plowing under green crops makes the land rich in carbonaceous matter, and at the same time it prevents some of the nitrogen in the soil from running to waste. The plants gather up what available nitrogen they can find in the soil, and organize it into good food for animals. We can feed out this food, and have 90 or 95 per cent of the nitrogen left in the liquid and solid excrements, or we can plow under the crop and have all the nitrogen left in the soil for future crops.

W. Hunter, of Canada, asks, "Is it better to sow clover seed early in the spring, on the last of the snow, or wait until the ground is dry enough for a team to harrow fall wheat?"—My own practise is to harrow the wheat three times in the spring. We go over the wheat both ways with the harrows, and then sow the clover seed and follow with the harrows to cover the seed. If the ground is very hard, the harrows do not break up the crust sufficiently to afford a good covering for the seed, and if dry weather follows we have a poor "catch" on these hard spots. I have my doubts as to which is the better plan, but am inclined to think that so far as securing a good catch of timothy and clover is concerned, it is better to give up the idea of harrowing winter wheat in the spring, and to sow timothy seed in the fall, and the clover seed *very early* in the spring. It depends very much on the soil and season. The harrowing helps the wheat and kills a good many weeds, and on sandy loam the harrow leaves a good seed-bed for the clover, and if we are favored with a few showers, we are pretty sure of a good catch of clover.

Last year all my clover failed. My wheat also is a poor crop. And I do not feel like giving advice. I am enjoying a short spell of humility. I have to whistle and keep working. I try to look at the bright side. I have 32 acres of capital barley, seeded down with clover and timothy, which seems to be a good catch. But my clover last fall was just as promising, and yet it was all winter killed except along the fences and dead furrows, where the snow protected it. I do not like to own it even to myself, but I think I weakened the young clover plants by letting my sheep and pigs pasture it too close last fall. I shall at any rate keep them out of my young clover this fall.

I had an old timothy meadow which I pastured last fall pretty close. This year the hay was not over half a ton per acre. I had another meadow, which, owing to the fact that we sowed part of the field to rye, we could not pasture after the first of September. The grass on this meadow was as thick and heavy as it could grow. We got more hay from one acre of this meadow, than from four acres of the other. I have always thought it did not hurt meadows to pasture them in the fall, but last winter was so unusually cold and the soil so dry, with little or no snow to cover it, that a slight coat of grass was of great value as a protection from the severe cold winds, and also probably proved useful as a mulch during the dry weather of spring.

I have also 22 acres of good rye, seeded down last fall with timothy, and the drier portions sown also with clover this spring. The field has a cheerful look. Three or four acres, where I manured heavily for mangels four years ago, is a particularly pleasant spot to visit during a fit of the blues. The rye is six feet high, and as stout as it can grow. It is the cheapest and most profitable crop I have raised for years. It was a rough piece of low land, which we sowed with oats two years ago, and seeded down. But the seed did not take well, and so I concluded to plow it up and seed it down again early in September, with timothy alone. But after the field was all prepared, the Deacon persuaded me to sow rye and seed down with it. I am glad I took his advice, though I am not sure but I should have done better to have sown timothy alone.

I have another crop which has also a cheerful look—potatoes. We have a few Extra Early Vermont, Snowflake, Brownell's Beauty, Compton's Surprise, Early Rose and Late Rose, Peerless, and Peachblow, all growing in the field. I expected the bugs, and got five pounds of Paris green ready for them. The field was a clover sod. It was pastured with sheep last year until September. There were a good many thistles, and we plowed the land early in the fall. This spring we did not plow it again, but spread on a moderate dressing of fine, rich manure—say eight tons per acre, and worked it thoroughly into the surface soil with harrows and cultivators. Never have I had a field of potatoes look so promising. The bugs came and deposited their eggs, but the vines grew so luxuriantly, that the plants did not seem to miss the sap which the caterpillars ate. So far the bugs have done us no serious damage, and the Paris green is reserved for the next brood, which I suppose will soon make their appearance. We can still grow potatoes. But the true plan will be to make the land rich, and plant good varieties which will stand manure.

We weaned our lambs to-day, July 16th, and weighed them. The oldest were a "pair of twins," born February 27. The ram lamb weighed 92 lbs., and the ewe lamb 84 lbs. They will be 20 weeks old to-morrow. Ram lamb born March 2, 87 lbs. Twin lambs, born March 3, 81 lbs. and 83 lbs. The next oldest were from a ewe that had three lambs, born March 8. We raised them all—mothering one on a Merino ewe. The three weighed 71 lbs., 76, and 78 lbs.—225 lbs in all, at 4 months and 8 days old.

I will give the rest in order:

Ram	lamb,	Born	March	11,	Weighed,	July 16,	91	lbs.
"	"	"	"	13,	"	"	107	"
"	"	"	"	14,	"	"	89	"
Ewe	"	"	"	14,	"	"	81	"
Ram	"	"	"	15,	"	"	72	"
"	"	"	"	17,	"	"	91	"
Ewe	"	"	"	19,	"	"	92	"
"	"	"	"	19,	"	"	86	"
Ram	"	"	"	20,	"	"	81	"
"	"	"	"	23,	"	"	89	"
"	"	"	"	24,	"	"	91	"
"	"	"	"	28,	"	"	76	"
"	"	"	April	5,	"	"	77	"

The following are the weight of the grades:

Ewe	lamb,	Born	March	2,	Weighed	July 16,	91	lbs.
"	"	"	"	18,	"	"	75	"
"	"	"	"	20,	"	"	83	"
"	"	"	"	22,	"	"	70	"
Ram	"	"	"	28,	"	"	78	"

These grades have all two and some of them three crosses of Cotswold blood—starting from a common Merino ewe. The following are the weights of three ram lambs, from common Merino ewes, and a full blood Cotswold ram, 85 lbs., 72 lbs., 70 lbs.

There is a common opinion that such sheep degenerate after the first cross. It is not so in my experience. But in all cases I used a full-blood Cotswold ram. If cross-bred or grade rams were used, I have no doubt the lambs would degenerate. Another point ought to be mentioned. I should not think of selecting full-blood Merino ewes for the purpose of crossing with the Cotswold. The weaker the "prepotency" is in the ewe, and the

stronger in the ram, the more will the lambs take after the ram.

What we want in this section is combing wool, good lambs for the butcher, and choice mutton. It is an easy thing to get all three. Select a flock of common Merinos, or part Merino ewes. Feed them well. Buy a full-blooded long-wooled ram—either Cotswold, Lincoln, or Leicester. Have the lambs come in February or March. Feed ewes and lambs as well as you know how. Sell the ram lambs to the butcher at four months old. Save the ewe lambs, and when eighteen months old, breed them to a full-blooded long-wooled ram, and continue this process until you think it desirable to resort to some other cross—such as Shropshire Down. Mark you, I am not recommending a breeder of choice Merinos to abandon that breed, or resort to crossing. Neither would I recommend a breeder of South Downs to cross them with long wools. But to a farmer who is not a breeder of thoroughbreds, and who wishes to keep a flock of sheep merely for wool, mutton, and lambs, the plan I have suggested can be adopted with little expense, and with every prospect of success. But let no one think he can raise this class of sheep unless he is prepared to feed them better than most farmers feed common Merinos.

"I thought you could not get through without bringing that remark in again," said the Deacon, "you have said that a dozen times, and yet you keep your common Merino ewes running with the Cotswolds and grades. They all have the same feed, and yet your Merinos are no better than the average."—This is true. My Merinos have precisely the same food as the Cotswolds and grades, but they probably do not eat so much. Of 100 lbs. of food eaten by a common Merino, probably 90 pounds is needed to support the vital functions, and 10 pounds is used to produce wool, bones, flesh, etc. But the same weight of Cotswold and grades will consume in the same time, say 120 lbs. of food. If 90 lbs. is used to support the vital functions, there will be 30 lbs. left to produce wool, bone, flesh, and fat, and if the Merinos gain 50 lbs. in a year, the Cotswolds ought to gain 150 lbs.—and they will do it. One-fifth more food trebles the growth.

The Deacon tells me I misunderstood the Insurance Agent in regard to the charge for a permit to use a steam-engine. When he said "one per cent" he meant one dollar on a thousand. Be this as it may, I have decided to meet the difficulty by thrashing in the field. I usually thrash as we draw in from the field, building the straw stack in the barnyard. The only difference it will make will be that the straw stacks will be in the fields instead of in the yards. But this in my case is of little consequence, because we cut all our straw both for feed and for bedding, and of course have to draw it to the barn. This work is done principally in winter, and it will make very little difference whether we draw from the field to the barn, or from the yard to the barn. It has to be put on a wagon in either case. The only difference is in the distance we have to drive. And what we lose in the winter we gain now during the busy time of harvest.

The "Model Barn" has yet to be built. It must embrace the idea of thrashing more or less of our grain as we draw it from the field at harvest, and of furnishing ample room for holding *cut* or *chopped* straw, cut corn-fodder and cut hay. If I was to build one, I would have it two stories high and a basement. The upper story should be for cut feed, and the lower story for sheep and horses, and the basement for cows, pigs, root-cellar, etc. The straw, corn-stalks, and hay should be cut with a large feed-cutter, with a "carrier" attached for conveying the cut stuff to the upper story, where it should be placed in large bins or compartments. From these spouts, 2½ x 2½ feet, would let it fall as fast as wanted to the stories below. I tried the plan last winter, and found it a great saving of both food and labor. I should use the straw quite freely as food for sheep, and after they had picked it over, use it first for bedding for the sheep and horses, and afterwards throw it down to the basement to be again used for bedding the cows and pigs. The horse litter I would also use for the latter purpose. I use all my horse litter in this way now—and does not this "double-worked" manure make the corn and grass grow!

In this section our peas are more or less affected with the pea-beetle. I have occasionally sown these home-grown "buggy peas," but I usually get seed peas for my field crop from Canada. They are a small white pea, called I believe the Canada Creeper. Mr. T. C. Maxon showed at the State Fair last year several varieties of peas. Among them was a barrel of Black-eyed Marrowfats. I never saw a handsomer sample. They received the first prize. After the Fair was over, and when we were taking home our stock, Mr. Maxon said, "I am going to leave this barrel of peas, and I want your men to put it in the wagon and take it home." I do not know what I have ever done to merit such a present, but I took the peas and this spring drilled them in.

I have always had a sort of easy conviction that it was well to sow clean, pure, and well grown seed; but the conviction was not strong enough to enable me to resist the temptation to sow such seed as we happened to have, or such as was easy to get. But now I think I am converted—and I hope to stay converted. This crop of peas has taught me a lesson I hope never to forget. There is as much difference in the growth, vigor, and luxuriance of these peas as between a grade Cotswold and a common Merino.

"Prizes for grain," said the Deacon, "are won by those who know how to clean it most thoroughly. I guess if I had run my wheat as many times through the fanning mill as you did, I could have beat you."—I won't argue that point. The extra quality of these prize peas may have been due in a good degree to the skill with which they were cleaned. No matter about that. If so, it shows the importance of having a good fanning mill, and using it until we have got out the largest and heaviest grains for seed. If a farmer has 500 bushels of wheat, and wants 50 bushels for seed, it will pay him to run the whole lot through the fanning mill, until he has got out 50 bushels of the best kernels. We should clean our grain for seed as carefully as an experienced exhibitor cleans his grain for a fair.

I have an idea that we shall see higher prices for wheat, and lower prices for barley for the next few years. Last year barley paid better than wheat. Next year it would not be surprising if wheat paid better than barley. I think the prospects for farmers are quite encouraging. The present and prospective good prices for pork will add largely to the aggregate profits of farmers, and do much to enhance our general prosperity. Many financiers are looking to political action to set the wheels of trade and commerce in motion. I am looking to the pork barrel and the corn crop. The pig is master of the situation. He is the most potent agent for keeping down railroad freights and for increasing agricultural profits. We can, by his aid, pack a dozen bushels of corn in a barrel, and transport it around the world. What we have to do now is to look to the *quality* of our pork, bacon, hams and lard.

English Cheese Making.

The literature of cheese-making has received a valuable addition in a paper recently published by Mr. I. C. Morton, the well known English Agricultural writer and editor. This paper, written for the Journal of the Royal Agricultural Society of England, and re-published in pamphlet form, gives that which no other work upon dairying, that we know of, contains, but which is most valuable and eagerly looked for, viz: accurate and exact information as to the details of cheese-making; such as: the temperatures at which the various operations should be performed; the manner of making rennet, and the exact proportion of rennet to be used with a certain quantity of milk. The detail of the methods of making the famous Cheddar and Cheshire cheese, are given as follows.

CHEDDAR CHEESE.—In the Cheddar system, by which the best cheese in the world is made, milk of the morning and evening is brought to a temperature of from 78 to 84 degrees, according to the condition of the weather; if that has been warm, the rennet will be as effective with the lower temperature, as with the higher after a cold night. The evening's milk is placed in vessels to cool during the night, being stirred at intervals during the evening, is skimmed in the morning, and the cream with a portion of the milk is heated up to 100 degrees, by floating it in tin pails in a boiler. The whole is poured into the vat or tub, into which the morning's milk is being strained, so that the whole is brought to the proper temperature. The rennet, half-a-pint to 100 gallons of milk, is then poured in. The rennet is made from small stomachs of calves killed at a week old, cured, and kept 18 months before being used. The stomachs are steeped in salt water—one quart to each—for three weeks. This rennet is strong enough to form the curd in one hour at the above temperature. The curd is cut in the usual manner with curd-knives, but with great care lest the cream should escape with the whey, and with several interruptions of the process, which in all takes half an hour. It is thus broken into pieces no larger than peas. The whole mass is then gradually and carefully heated by means of hot water let into a space around the cheese tub, up to 100 degrees. This takes half an hour. The hot water is then drawn off, and the curd is stirred for half an hour in the hot whey, being then reduced to still smaller fragments. Another half hour is allowed for the curd to settle,

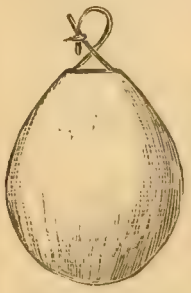


Fig. 1.—RENNET.

Fig. 2.—VAT FOR CHEDDAR CHEESE.

when the whey is drawn off into a vat 6 inches deep, where it is cooled, skimmed, and the cream made into butter. This is equal to about half a pound per cow per week. After standing another half hour, the curd is cut into pieces, turned over, left for half an hour longer, and again cut and left for a quarter of an hour. It is then slightly acid to the taste. If the acid becomes too much developed, the cheese will not press solidly, but will sink and become misshapen. It is then torn to pieces by hand and cooled, packed in thin layers in the vat, and after being pressed for half a day, it is again broken up by hand. When cool, sour, dry, and tough enough, it is ground in the curd mill; 2 lbs. of salt are added to 112 lbs. of curd, and when quite cold, it is placed in the hoop with the cloth, and taken to the press. The pressure is about 1,800 to 2,000 pounds. The cloth is changed the next day, and again on the second day. On the third day the cheese is taken from the press to the cheese room, bandaged, and turned daily for some time. The temperature of the cheese room is kept at 65 degrees. The cheese is ready for sale at the end of three months. The weights of these cheeses are from 75 to 120 pounds, this being dependent upon the size of the dairy, the object be-

ing to make all the milk of 30 to 40 cows for one day, into one cheese.

THE CHESHIRE SYSTEM is but slightly different from this. The milk is set at 90 degrees, a very small portion of the cream of the evening milk being reserved for the family butter. The rennet used is made the day before. 8 or 9 square inches (a piece 2 x 4 or 3 x 3 inches), of the dried stomach is put for one day into a pint of salt water, kept in a warm place. This is enough for 100 gallons of milk. When weighed and measured accurately, 300 grains of the dry stomach, standing in 12 ounces of water, at a temperature of 70 degrees, for a day, yielded the proper quantity for 50 gallons of milk at 90 degrees. When the curd is so tough that a piece of about a pound in weight, will rest upon the hand without breaking, it is salted with 3½ to 4½ lbs. to the 112 lbs. of curd, broken in the curd-mill, and then placed in the hoop by hand for pressing. It is pressed very lightly, turned each day in the press, and a dry cloth used each time. After one or two hours' pressing, the curd is placed

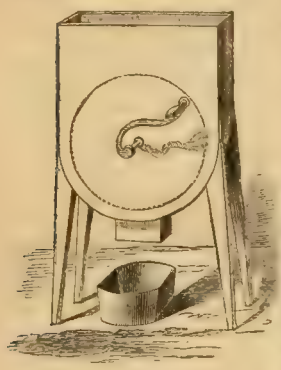


Fig. 3.—CURD-MILL.

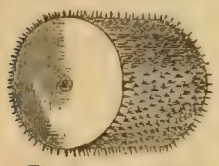


Fig. 4.—CYLINDER.

Fig. 5.—WOODEN CURD-KNIFE.

Fig. 6.—CURD-KNIFE WITH BLADES.

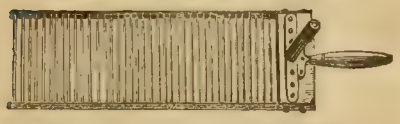


Fig. 7.—HORIZONTAL CURD-KNIFE.

in a warm chamber or oven, at a temperature of 90 to 100° during the night. The cheese is in the press for three days, when it is bandaged, taken to the cheese room, and turned each day for several days. Five to seven days are required in drying a cheese made thus, but it soon ripens for market.

The Cheddar system is particularly well adapted for either the factory or the farm dairy. No food is more nutritious and wholesome than well made and ripened cheese, and every farmer should have it upon his table every day. Small Cheddar cheeses may be made where six to ten cows are kept, by following the directions given in this article. The rennets may be saved for use by procuring the fourth stomach of milk-fed calves, removing the contents without washing the interior, putting a handful of salt into it, and rubbing the outside well with salt. A small twig is then put into it to stretch it, as shown in fig. 1, and it is hung up in the dairy to dry. Great care must be taken to cure it perfectly, as one tainted rennet would spoil a thousand pounds of cheese. The form of the curd-vat is shown at fig. 2; it may be small or large to suit the need. The curd-mill is shown at fig. 3, and

Fig. 8. BAG.

Fig. 9. HOOP.

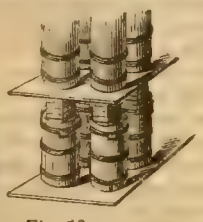


Fig. 10. IN PRESS.

the grinding cylinder at fig. 4. A curd knife made of wood, at fig. 5; a knife with several blades is shown at fig. 6, and at fig. 7 is the knife for cutting the curd horizontally. At fig. 8 is a cloth bag, into which the curd is placed for a cheese about 10 or 15 pounds weight, (needing 50 to 75 quarts of milk); fig. 9 is the hoop into which the bag filled with curd is placed. The curd is then pressed as shown in fig. 10, the pressure for 20 pounds of curd being about 1,000 pounds. This pressure may be made by a weight hung on to the end of a lever, every pound weight on the long arm being increased as many times as that arm is longer than the short one. With these directions any person should be able to make a cheese, and after a few attempts, and perhaps a failure or two, to make a good one. Some of the above cuts were given in the *Agriculturist* several years ago, but will be new to many of our more recently acquired readers.

Frame for Grinding Tools.

It is rarely that tools upon the farm are ground in the best manner; even the tools of mechanics are sometimes found with faulty and ill-ground edges. Instead of a perfect bevel parallel as to heel and edge, and of a proper angle, the majority of cutting tools, such as plane irons, chisels of all kinds, and draw knives, are found on examination by a critical person, to have either a convex or a concave bevel which, at the same time, is wider from heel to edge on one side than on the other, not at right angles with the side of the tool, and with the angle of the bevel, too short in soft wood cutting tools, and too long in those for working hard wood or iron. This irregularity comes from unsteadiness in holding the tool while it is being ground, from holding it in a wrong position, and from having the stone uneven, although this last trouble is the necessary consequence of the first. The first requisite in grinding a tool properly is to have the stone hung and balanced truly. The next is to have the stone turned evenly on the face. This is best done by means of an old file used upon a solid rest as in turning in a lathe. The next is to have a contrivance for holding the tool to be sharpened

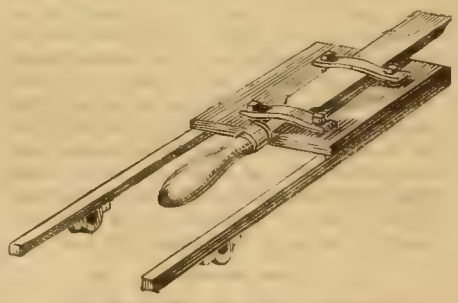


Fig. 1.—FRAME FOR HOLDING TOOLS.

in such a manner that it will be ground to the proper angle, and meanwhile is held rigidly and immovable to the surface of the stone. It is impossible to do this by hand without some help. When the operator must turn the stone himself, his case is hopeless, unless he can have some mechanical aid. Such aid may be secured by the help of the simple device here illustrated, which is shown separately in fig. 1. It is a frame of wood furnished with clamps of light half-round or flat bar iron, which are tightened by nuts or thumb screws at the back. The tool to be ground is fixed firmly in the clamps. The frame is pivoted by the arms to the grind-stone frame by means of movable pins. There are several pin-holes by the use of which the angle at which the tool is presented to the stone may be changed. In fig. 2 the frame is seen in use as the operator presses the tool to the stone while he turns it by the treadle. This contrivance may be modified in numberless ways to meet different requirements, but the principle will be always

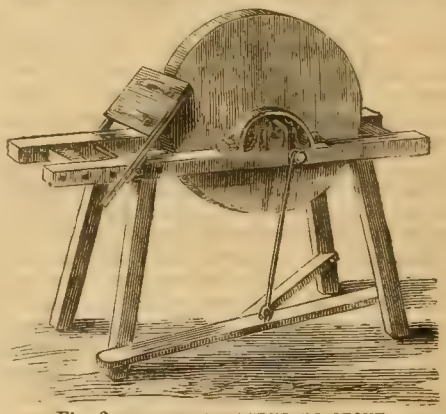


Fig. 2.—FRAME ATTACHED TO STONE.

the same. For instance, and it is a very extreme case, to grind a cutting bar for a mower or reaper, we would use a stone with a double beveled face ground purposely for this work, as shown in fig. 3. The bar would be clamped in the frame by using a piece of stout inch-board and placing the bar be-

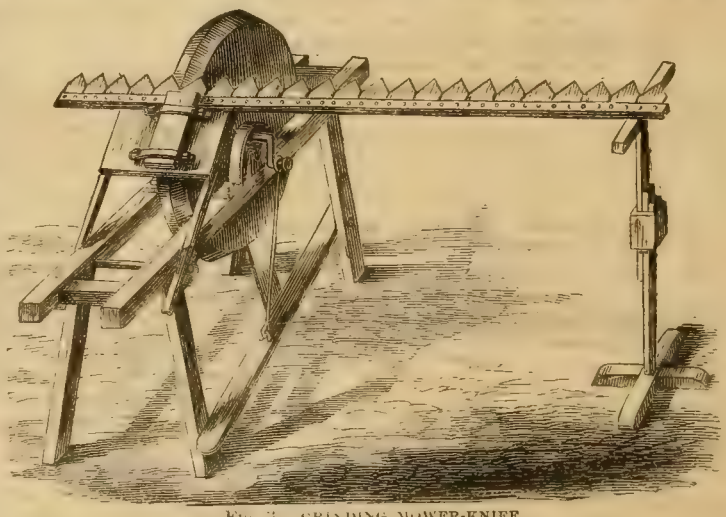
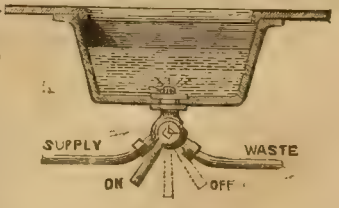


Fig. 3.—GRINDING MOWER-KNIFE.

tween this and the frame, and screwing the clamp tightly. To sustain the end of the bar steadily, a support should be used, consisting of a sliding-rod with a cross-bar at the top, which may be fixed by a wedge at the proper hight for use. If a scythe is to be ground, the frame may be fixed so as to form a rest upon which the tool may be steadied, also when grinding broad tools, as the knives of planing machines or edgers for shingle machines, it may be fixed in the same manner. By changing the manner of using the device or adding to it in this way, it may be made very serviceable.

Water-Trough for Stables.

Where water is supplied to the stable by pipes to every stall, the arrangement shown in the accompanying engraving will be found very convenient. The illustration speaks for itself, so that but little description is needed. The trough may be of wood, although cast iron, enamelled inside, is



WATER-TROUGH.

preferable. The water is let in and discharged by means of a key tap, the key being made to fit every tap in the stable. There can thus be no

accidental overflow or stoppage of the water, and the flow is regulated with ease and certainty.

Ladders for the House and Barn.

Every farm-house and barn should be provided with a ladder. The most vulnerable part of a farm-house as to fire is the roof. This is true also of the barn and stables, so far as regards outside fires. For want of a ladder the house may burn, when one pailful of water applied at the right place, might have quenched the fire at its first discovery. We would, therefore, have a ladder for the house and one for the barn always in reach, and never to be loaned, except of course in case of emergency, when it should always be brought back again as soon as possible. It may not be out of place to say a word here as to returning borrowed things. A neighbor, who is willing to lend when asked, should certainly be treated with so much show of gratitude as to have the borrowed article returned to him as soon as it has been used. In the case of ladders, which are frequently borrowed — for few farmers have them — it is generally necessary for the lenders to go and bring them back again. Every owner or occupier of a country or farm-house should have a ladder ready for instant use. To make a ladder is a very easy matter. A piece of 2×4 spruce timber of straight grain, free from knots, will make a very good one, when a round pole of the proper character cannot be procured. A well-grown slender spruce pole makes the best ladder. It should be well seasoned and straight, and sawn into two equal parts exactly in the center, peeled and shaved down to a good taper. Two pieces of 2×4 will answer a good purpose. In this case the timber may be cut away at each end, leaving it strongest in the middle where the greatest strain comes, as shown at fig. 1. The rungs should be of white ash, tapered to both ends, and should be well seasoned. The holes should be marked out on the sides, and bored with the proper slant to admit of the spread of the lower end of the ladder. This may be done by marking a short wooden straight edge with the proper slant for the holes, and then marking them upon the rough pieces before they are dressed out.

Fig. 1.—LADDER.

In carrying a long ladder, the easiest way is to fasten it upon a wheelbarrow, as shown in fig. 2, and taking it by the end as handles to trundle it along. One can then see the whole ladder before him, and in turning corners is in no danger of doing any injury to anything that may come in the way of the sweep of the hinder half, as may happen when it is carried upon the shoulder. A very convenient ladder for the barn is made in two halves hinged together, as shown at fig. 3. It is kept from spreading by cords tied to screw eyes upon each half. When the whole is needed for use, the cords can be wound around the joints where the sides lap, and a long ladder is made of it. The foregoing, with its illustrations, was prepared before we received the article on Extension Ladders, by L. D. S., given last month on p. 296. While they differ in some unimportant details, the two articles together give the farmer such full instructions, that he need not be without a ladder because he does not know how to make one.

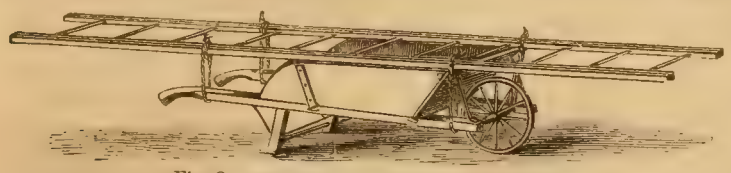


Fig. 2.—MANNER OF CARRYING A LADDER.

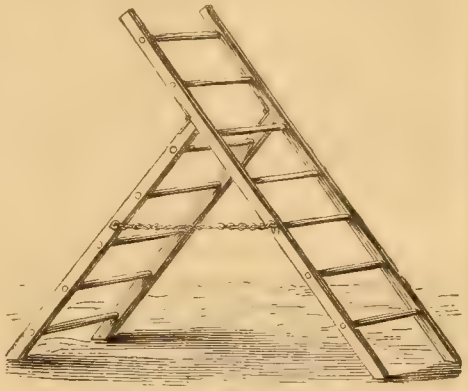
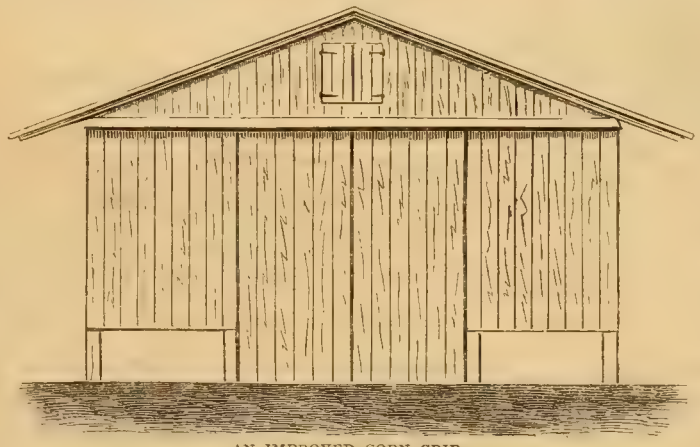


Fig. 3.—LADDER IN HALVES.

An Improved Corn Crib.

The waste caused by vermin in the corn-crib is frequently very serious. Rats are the especial enemy of the farmer in this respect, and any means whereby their ravages may be prevented, will be productive of a great saving. The burrowing rat, which makes its nest beneath the buildings or rubbish piles, does the most mischief in the corn-crib, and unless the crib is so made that there are no hiding places about it, it is impossible to dislodge it from its retreat. The corn-crib, of which the illustration is an end view, is made so that it is inaccessible to rats or mice, and there are no hiding places beneath it. It is elevated three feet above the ground, on firmly set posts. The cribs are 6 to 8 feet wide, and of any desired length; for 4,000 bushels of corn in the ear, the building should be 40 feet long, with cribs 8 feet wide and 12 feet high. The outside is closely boarded and battened. The floor of the cribs are made of three-inch strips, set an inch-and-a-half apart, to admit a current of air. The space between the cribs is 12 feet wide, and is closed inside from the bottom of the cribs to the ground, forming an inside shed, which is not accessible to any farm animals or vermin. This inner shed is closed by sliding doors at each end. The cribs are boarded up inside the shed with three-inch strips placed a quarter of an inch or half an inch apart, to admit air. The cribs are thus weather-proof on the outside, and by opening the slide doors, free circulation of air can be obtained in fine weather. Above, the shed is floored over, forming an apartment 12 feet wide, by 40 feet long, for storage of corn. A trap door may be made in the center of this floor to hand up corn from below. Any corn that is shelled off from the ears, and falls through the floor, can be picked up by poultry or pigs, and none will be wasted. If desired, lean-to sheds may be built against the sides of the crib, giving valuable room for many purposes. The shed between the cribs will make an excellent storehouse for implements, and as many doors may be made in the cribs as may be desired. These should be slide doors, and loose boards should be placed across the door-ways inside, to prevent the corn resting against them. The roof should be well shingled, and a door made at each end of the upper loft, which may be opened as needed for thorough ventilation.



AN IMPROVED CORN CRIB.

Pure Air in the Stable.

The comfort and health of farm animals depend greatly upon the purity of the air in the stables, and their usefulness and profitableness depend on the comfort and health they may enjoy. Pure air can only be obtained through drainage and ventilation. Want of drainage can not be substituted by ventilation, for the gases which arise from the decomposition of the droppings of the animals, are constantly being produced, and are supplied as fast as they may be conveyed away. These gases are very injurious. The products of the decomposition of the waste from stables are chiefly pungent ammoniacal gases, which cause diseases of the eyes, and irritation and inflammation of the air-passages and lungs; and sulphuretted hydrogen and similar compounds, which entering the lungs poison the blood, and cause diseases of the typhoid type, which are so common in crowded stables. Drainage and ventilation should therefore go together. As a matter of profit the drainage of stables should not be neglected. The largest portion of the nitrogen of the manure exists in the liquid portion, and no other valuable part of the manure is so volatile, as that which contains the nitrogen. If the liquid waste from the stable is not properly collected, we lose that part of the manure which is of the greatest value, and which acts with the greatest rapidity in the soil. It is not enough that drains and a safe drainage-tank should be provided, but some contrivance should be used to prevent the gases from the tank and the drains from escaping into the stable. A drain-trap, such as is shown at fig. 1, and in section at fig. 2, will answer this purpose very effectively. It is a box of wood, covered with a stout grating, and divided into two compartments by a piece of board placed across it at the upper part. The outlet to the discharge-pipe is placed above the level of the lower edge of the board partition, so that the water in the trap always covers this lower edge, and prevents any vapor or gas from passing from the drain to the stable. The trap should be flushed

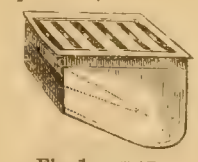


Fig. 1.—TRAP.

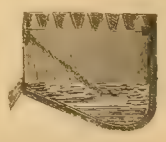


Fig. 2.—SECTION.

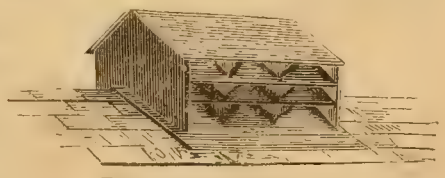


Fig. 3.—ROOF VENTILATOR.

out frequently with a pail of water and a handful of ground gypsum (plaster) should be thrown into it every day. By these means, and occasionally washing the floor and gutters, the stables may be kept sweet and clean. There will remain then only the impure air from the lungs and bodies of the animals to be carried off by the ventilators. These should be arranged so that no cold drafts can occur. A number of small openings are preferable to one large one. The ventilators may be placed in the roofs or the walls. They should be made with movable laths, so that they can be closed in stormy weather sufficiently to keep out rain or snow, and yet permit foul air to pass outward. Fig. 3 shows a roof-ventilator, and figs. 4 and 5 others for the walls. It is sometimes very convenient to place the last-named over the window, in which case it may be included in the same frame with the window, at a saving of expense. Windows are not good ventilators at all times, unless they are provided with lathed shutters, as they allow of a strong draft of air, which is as likely to blow inward as

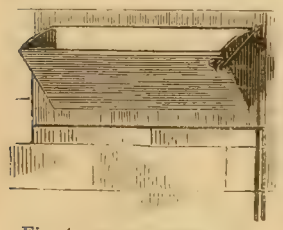


Fig. 4.—SIDE VENTILATOR.

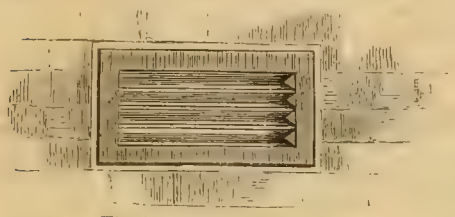
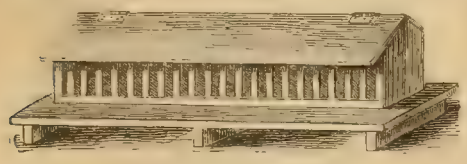


Fig. 5.—SIDE VENTILATOR.

outward, but if a ventilator, as here described, is placed over every window, then every need is well provided for. These ventilators may be opened or shut by means of cords. It will be obvious that the wall ventilators should be placed as near the ceiling as possible. Abundant spaces covered with wire-grating ought to be made in the doors or walls near the bottom, to admit fresh air.

A Feed-Box for Poultry.

In successfully keeping several hundred fowls at a time, we found it to be both economical and convenient, to have a supply of food always accessible. At the end of the season there was no more corn charged in proportion to the number of fowls, than in feeding in the ordinary manner. Of several kinds of feed-boxes and troughs that were tried, the one here illustrated was found to be the best. One of its important features is its capacity for accommodating a large flock. If made of boards, 16 feet long, one box is large enough for 150 fowls. When



FEED-BOX FOR POULTRY.

the food is always ready, the fowls do not all want to feed at the same time, and 100 can feed at once at a trough of this length, with some crowding, though not more than is usual in feeding fowls in large flocks. Another good feature is its cleanliness, the food can not be fouled by being trampled and trodden upon, and in feeding fine food, none is wasted. Crushed boiled potatoes and meal or other soft food may be fed as well as corn, and the food is protected from rain and snow. The trough is raised upon feet about three inches from the ground. On each side is a foot-board, nine inches wide, and the feed-space is six inches wide; thus two boards, twelve inches wide, will form the bottom. The trough may be two or three inches deep, or more, if thought desirable. The feeding-spaces are made of square pickets, one inch thick, with the edges rounded off smoothly, and a foot long. One side of the cover is hinged, so that it can be raised in filling the box, and fastened with a hasp and peg when shut down. For convenience of removal, a small wheel may be placed at one end, and a pair of handles at the other, so that it is in reality a sort of wheelbarrow, which can be moved from place to place. If some little trouble is taken to dress the lumber, and put the trough together neatly, and to paint it, it will make a very neat addition to the poultry yard, and will be much more durable than if left rough.

RYE FOR WINTER PASTURE.—An early sown crop of rye will furnish a valuable winter or early spring pasture. The cost would be as follows. Plowing one acre, seed two bushels, harrowing or drilling, and if necessary some fertilizer. Really, the whole cost will be the seed, because the labor will be well expended on the land. A portion of this cost will be returned in the manure left upon the field by the cattle pastured. The return will be at least equal to the value of one ton of hay per acre, which will be a handsome profit. In addition to the value of the feed gained, the condition of the stock will be greatly improved by a healthful change of feed at a time when it is much needed. What is left of the crop after it has been pastured, will be valuable to plow under, and the ground will be in an excellent condition for a spring crop.

Does Pork Pay in New England.

After cyphering on the pork question for the last five years, we have found so little profit in good years, and so much loss in bad, that we had pretty much settled upon the policy of no pork at all upon a New England farm. We have no abhorence of swine's flesh, and shall probably continue to favor the baked pork and beans, the boiled dinner, the codfish cakes, the fried fish, the spare-ribs, and other good dishes of which pork is the glory, unto the end, whether the pig is raised in Illinois or in our own stye. Looking at the question in a purely economical view, we do not think it pays us to raise pork to sell. As a matter of private opinion, which we should not like to have published outside of the *Agriculturist* family, we think we have lost money on every pound of pork we have sold for the last five years. It may possibly pay to keep a pig or two to utilize the wastes of the family and as a matter of esthetics to raise your own pork for delicate white lard, and pink slices to broil and fry, and for one's own ham and sausage, but not beyond. To raise pork for the general market, brings us into competition with the prairies and the Mississippi Valley, where corn is grown for twenty cents or less a bushel. Whole hogs well fattened are put down in our village markets every winter for about six or seven cents a pound in consequence of this competition of the west, and this does not give over fifty or sixty cents a bushel for our corn, which is a good deal below the market price. We have outgrown the necessity of fattening pork, and relying upon the sale to raise money to meet farm expenses. We can raise other things that pay much better, because they are free, comparatively, from the competition of the great west. Butter still pays fairly, and a very nice article pays still better. It is not difficult to make a style of butter that will command fifty to sixty cents a pound sold to regular customers every week, in the village or city market. The same roots and meal that makes pork will make butter. Milk pays better still, either sold wholesale in the city, or peddled in the village. Raising poultry pays better. Many of our farmers raise large quantities of turkeys, geese, ducks, hens, and eggs, and the sales run from three to six hundred dollars annually. Chickens and turkeys brings from two to three times as much a pound as pork, and it costs but little more to make a pound of poultry than a pound of pork. Sheep pay better than pork. With a good sheep pasture the returns from a flock for lambs, mutton, and wool, are very satisfactory, and the labor is light. Raising blooded stock—herd-book animals, horses, sheep, and cattle—pays better, if one understands the business. Grazing and fattening cattle is a good business, and brings up a farm with very little labor. We have a class of farmers who make this a specialty, buying three and four-year-old steers in the spring and selling in the fall. Such farming pays well, and fruit farming, and these specialties are growing every year with an increasing town and city population. If we will study the home markets that are springing up in the older states, and aim to supply them, we shall make more money and raise less pork. NEW ENGLANDER.

Horse Feed-Troughs.

Many horses have a disagreeable habit of wasting their feed by throwing it out of their mangers in the search for the best portions. To prevent this, when cut feed is used, the feed-trough may be made with cross-bars, as shown in fig. 1. The bars prevent any violent jerking of the head in the effort to scatter the feed, which cannot be thrown out. This trough is well adapted for a loose box. A door may be cut in the front of the box or stall, opening inwards, which will prevent the horse from pushing it open, and a cord may be affixed by which it can be opened and kept raised when desired. A hay-trough, furnished with a similar preventive, is shown at fig. 2. This is a common form of manger, and the grating seen inside is a frame made of iron rods, about half an inch thick, which moves upon hinges at the back. It may be raised to put in the hay, and when let down lies upon the hay, and prevents it from being thrown out. We saw this last

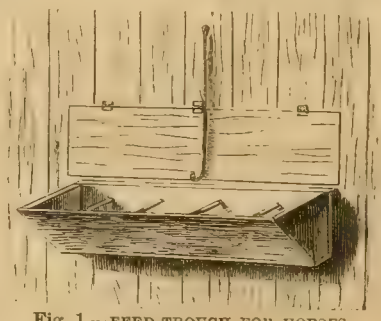


Fig. 1.—FEED-TROUGH FOR HORSES.

described arrangement in the very complete barn of Messrs. Reisig & Hexamer, of New Castle, N. Y. This barn was fully described and illustrated in the

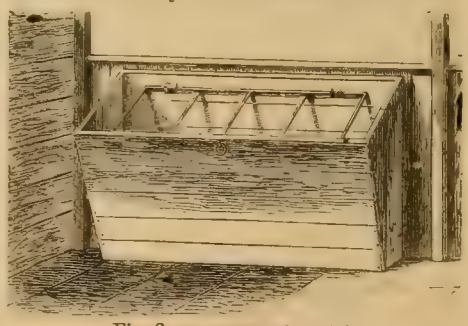


Fig. 2.—MANGER FOR HAY.

Agricultural Annual for 1867; it is worthy of study, as it possesses many valuable conveniences.

Small Butter Packages.

The market price of a commodity depends very largely upon its quality, appearance, and the convenient form in which it is presented to the purchaser. This is especially the case as to dairy products. Butter is exceedingly perishable, and if handled or disturbed in the marketing, its value is greatly lessened. Dairymen do not seem to know this fact, if we are to judge by the way their butter comes to market for distribution by retailers. A large class of consumers need small packages,

holding from five pounds upwards. If these were made in such a shape and of such material that they could be used when empty for some domestic purposes, if it was not convenient to return them, or so cheaply that they could be thrown aside without much loss, a great convenience would result. We have seen a small butter package, which is made by James Gilberds, of Jamestown, N. Y., which seems to answer the purpose well. It is of tin, with a wooden lining, and is made to pack from 5 to 50 pounds. The wooden lining is a new feature in these packages, and prevents the corrosion of the tin from contact with the salt of the butter; the tin casing protects the light wooden lining, and gives strength with lightness.

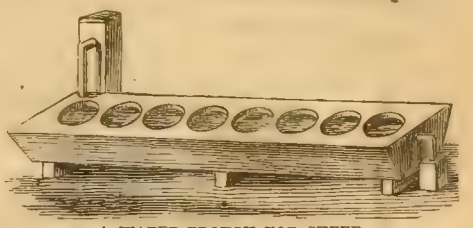
A Look at Some Western Dairies.

BY A STAFF CORRESPONDENT.

NORTHERN ILLINOIS.—Those who think the Prairie State wholly given to hog and hominy, have a very imperfect conception of its agriculture. In a recent trip to Elgin, in Kane county, over the Northwestern railroad, we had occasion to notice the great change which a few years have wrought. Of necessity the settler of small means seeks bread and meat for his family, and corn and the pig by which he can transmute it into meat are his first thought. Then comes wheat to give variety to his table. The cow is an after thought, and among the luxuries of life. The rude age of agriculture is already passed in all this region. There are thriving villages at frequent intervals all along the road, making good home markets, and calling for a great variety of farm products. The call is no longer confined to corn and ham. They want beef, veal, milk, butter, cheese, mutton, and lamb, poultry and eggs, and the whole catalogue of large and small fruits. It was cheering to see how largely these wants are met in the districts immediately around these villages. Orchards and gardens are frequent, and the farmers' homes are often surrounded with ornamental trees, and occasionally a vineyard is planted. It has the appearance of a long settled country. Everywhere the leading crops, corn, wheat, oats, potatoes, and grass, are in splendid condition. Elgin is in the valley of Fox River, a region of high rolling prairie, well watered and beautiful. It is best known to the public as the seat of the factory of the National Watch Company. This industry has grown from small beginnings into national importance. The machinery, mostly invented and made here, saves labor so much, that they can undersell the best watches made in Europe, and are now exporting watches. A large town of some ten thousand people has grown up around the factory, and other manufactures are well established. It is not so well known that this is a fine dairy region, and its products rival the butter and cheese of New York State. In a district about the city not much larger than the county, they have 42,000 cows, 11 cheese factories, 5 butter factories, and, in the city itself, a factory for making Borden's condensed milk. This last industry has been well established for several years, and finds a ready market for its product quite largely on the sea-board. Chicago, of course, consumes all the cheese and butter made here, that is not taken in the local markets. The quality is said to be of the best, and sells at the top of the market. The factory system of making butter and cheese is well established in this and other districts in the vicinity of Chicago, and we see no reason why it should not spread all through the north-west, and follow close in the rear of our settlers to the Pacific coast. The well-watered valleys fed by streams from the Rocky Mountains are very numerous, and a large part of the mountains themselves are well adapted to dairy industry. The grass is luxuriant, the streams are clear and cold, the climate healthful. The cow and the factory are much better condensers of the wealth of these pastures and meadows than the swine. Cheese brings at least twice the price of pork, and butter is worth three or four times as much. There is no difference in the cost of transportation. The shrewd people that have settled northern Illinois and Wisconsin, and the regions west, cannot fail to appreciate these facts.

THE DAIRY INTEREST IN THE GRAZING BELT.—Stretching away east of the Rocky Mountains to the one-hundredth meridian, is a belt of country some hundred miles across and two thousand miles long, known as the grazing region. This was the favorite range of the buffalo, especially in winter, and he still shares it with ever increasing herds of Texas and graded cattle. It is the great beef-growing region of the country, in which cattle graze the year round, requiring no shelter and only the care of herdsmen. Immense fortunes are made in this business. It has been considered rather a problem whether good butter and cheese could be made of these grasses. Most eastern people have the impression, and it amounts to a very strong prejudice, that nothing but clover and the cultivated grasses in the favorable climate of the dairy districts of the east, will serve to make firstrate cheese and butter. Webster, Randall & Co. have undertaken to solve this problem. All the members of the firm are from New York state. E. D. Webster is the chief manager, and D. A. Baker the superintendent of the cheese fastory. The business is located at North Platte, on the Union Pacific railroad, just on the eastern edge of this great grazing belt. We recently had the pleasure of visiting this establishment in company with others interested in dairy matters. The company came out here last fall, and took up a quarter section of land near the village. Upon this the home, cheese factory, and farm buildings are located. All the region north of them is still unoccupied, and affords abundant grass for thousands of cattle. They have already invested $30,000 in their enterprise, and propose to increase their capital as the business seems to demand. They will unite the dairy interest with the raising of cattle for beef. They have about 600 head of cattle, including steers, cows, and calves. At present they are milking only 120 cows, but will soon have 200, and by another year, from 3 to 400. From the present number of cows they get about 1,400 lbs. of milk. The milk is of good quality, and eight quarts of it make a pound of green cheese. The weight shrinks about one-fifth in curing. It is ready for market when thirty days old. Some of it has already been sold, and gives good satisfaction. We had the privilege of testing several of the cheeses, and consider them equal to the average of the factory cheese of the east. The sample of it that we took away for our lunch-basket eats well. Butter-making is only an incident of the enterprise, and is chiefly designed to test the feasibility of making good butter. This is made by Mrs. Randall, a lady of high culture and social position, who prefers this pioneer life to the elegant ease of the circles in which she has been bred. With an honest pride she showed us several hundred pounds of her butter laid down in earthen pots. It was a nice article, good enough for New England or New York. The products of this factory will find a ready market at Cheyenne and Denver, where dairy products are much higher than upon the sea-board. This experiment we consider a splendid success. It is demonstrated that butter and cheese of an excellent quality can be made from the grasses that grow upon this vast elevated plain. There is, without doubt, more grass in this region west of the Missouri burnt up and decaying upon the ground every year than is used in all the settled portion of the country. To teach the nation how to turn this vast sea of herbage into wealth, is a noble ambition. The cheese factory system of the east properly introduced here will add millions to the annual earnings of our people. Cheap labor is wanted here, and John Chinaman is coming. C.

A WATER-TROUGH FOR SHEEP.—In watering sheep from a trough during the winter season, the wool about the cheeks is very apt to become loaded with ice, especially in case of those with faces thickly woolled. To avoid this, a covered trough with holes through which the sheep can drink may be used. If the trough is supplied with running spring water, and the overflow is carried away in a covered drain, there will be no ice about it, or at most but a very little in the coldest weather. A copious supply of water of a moderate temperature is of the greatest importance to sheep in the winter, although some people believe that sheep need no drink in the winter season. This is a very great error, and no owner of a flock should fail to provide



A WATER-TROUGH FOR SHEEP.

ample water, and to supply it in the most comfortable manner, so as to induce the sheep to drink. A trough, such as we have found useful, is shown in the engraving.

SELECTION OF SEED.—Among animals reproduction is most successful and profitable, when the agents used are most nearly perfect. And the same holds good with vegetables. The seed is the parent of the crop, and poor seed will invariably produce a poor crop. The heaviest, plumpest, and ripest seed is to be chosen, if we would secure the most profitable harvest. Of course no farmer should sow weeds, and expect to reap wheat, therefore the seed must be perfectly clean. It will pay to pick out cockle, chess, and such seeds by hand, rather than sow them to stock the ground hereafter. This present labor will be far the lighter than the after one of killing weeds. The proper selection of seeds for the fall-sowing is of the greatest importance. This is no new discovery, but is a fact that needs frequent repetition. One of the oldest writers on agriculture, who lived 2,000 years ago, declared the same thing when he said, "I have seen seed to degenerate year by year, unless the largest were culled out laboriously."

A Place for the Wagon-Box.

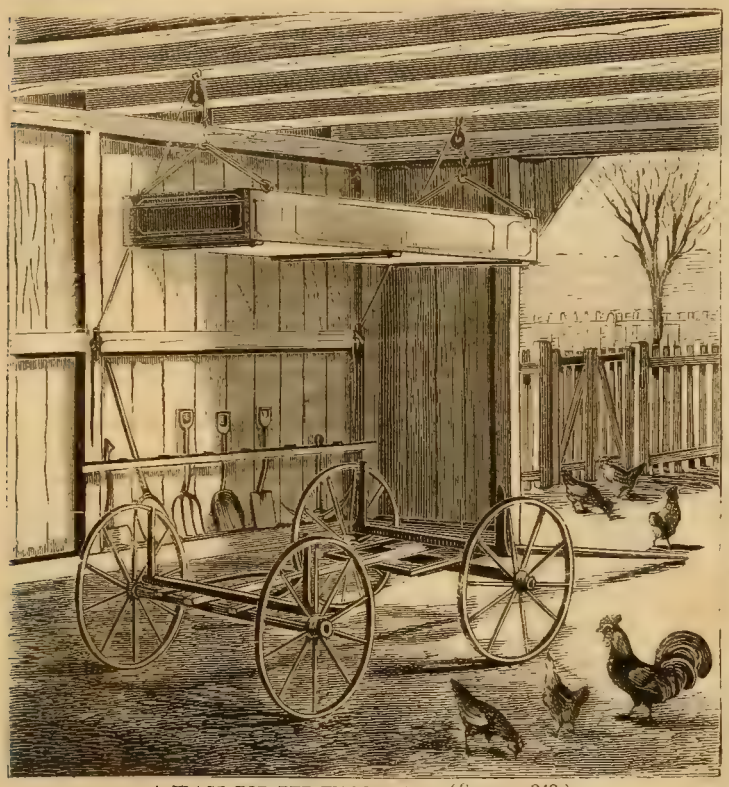
When not in use the wagon-box is a cumbrous thing to store away. It is too costly to be allowed to lie about amongst the plows and harrows, and too bulky to find a place in the tool-house or the sheds. Generally it lies up against the fence, or at the back of the barn, where it is as much injured in one year by exposure, as it would be by several years of use. A very convenient plan is to hoist it up to the ceiling of a wagon-shed, over the place where the wagon usually stands; here it can always be lowered on to the wagon in two minutes, and it is out of the way, and safe from injury. It is necessary to have four rings on the wagon-box, one near each corner, two short ropes, and two long ones; and two small pulley-blocks fastened to the beams overhead. The short ropes are tied to the rings, each crossing one end of the wagon-box. There should be a loop in the middle of each of these short ropes, to which the long ropes can be tied or hooked. When the wagon is backed into the proper place, the ropes are fastened to the wagon-box, and each end of the box is hoisted a few feet alternately, (if there is only one person to pull it up,) until it is high enough. The ropes are fastened around cleats fixed to the wall of the shed. In the illustration, given on the following page, the wagon-box is shown hoisted up, and the ropes fastened to the cleats.

A Conservatory Chapel at Utica, N. Y.

BY PETER HENDERSON.

Since the time that Sir Joseph Paxton conceived the idea of the first Crystal Palace, and carried it into execution, the use of glass in structures of various kinds has widely extended. Among all the purposes which glass structures have been made to serve, the city of Utica, N. Y., is, so far as I am aware, the first

to use one as a receiving-chapel for its dead. As is the custom in modern burial places, the Forest Hill Cemetery at Utica had a chapel with ready access to the receiving-vault; this chapel was built of stone, and was found to be quite unsuited to holding funeral services during the winter months. In view of this difficulty, Mr. Thomas Hopper, one of the trustees of the cemetery, last fall conceived the idea of a combined chapel and conservatory, and at once prepared plans for a structure of this kind, an interior view of which is given below. The main body of the building is 80 × 36 feet on the ground, and 25 ft. in its greatest hight; in addition there is on each side a lean-to or wing, 10 ft. wide, 13 ft. high, and running the length of the main structure. In front there is a porch or covered carriage-way, where those who attend the funeral can alight without being exposed in stormy weather. The main portion of the building, or auditorium, is arranged for holding the last services; movable seats, and all needed accessories being provided. Under each wing or lean-to on the sides, there being no partition between these and the main building, is abundant room for the display of rare and beautiful plants, which may be arranged differently, if desired, on each occasion. It is certainly a pleasing idea, to see all that is mortal of those, who in life were dear, pass to their final rest amid such surroundings; but this is not the only view to be taken of such a chapel, and however soothing may be its effects upon the feelings of the bereaved, its sanitary influences are still more important. The ordinary method of holding the services at the open grave in inclement weather, results in more serious consequences than most persons are aware of. Thousands of persons, especially those made feeble by their constant care of the deceased, contract disease which ends in death, by standing on frozen or snow-covered earth during the often too prolonged funeral services. In the usual stone chapels the case is not much better; being used only occasionally, they are but partially warmed, even when heated at all, but in the conservatory chapel, the heat required to keep the plants in good condition, makes the place always ready for funeral services. The Cemetery Association of Utica have the services of Mr. Roderick Campbell, a young man of education and intelligence, with an excellent knowledge of landscape gardening and horticultural matters in general. We learn that it is the intention of the association to provide houses in which plants may be grown for the decoration of the grounds of the cemetery. Of course the floral decoration of cemetery grounds is nothing new, it being carried to remarkable extent at a cemetery with the same name —Forest Hill — near Boston, where there are ample facilities for producing the plants; but the credit of the valuable idea of combining a chapel and conservatory is, so far as we are aware, entirely due to Mr. Thomas Hopper, of the Utica Cemetery Association.



A PLACE FOR THE WAGON-BOX.—(*See page* 343.)

Pine Barren Plants.—The Turkey's Beard.

The pine-barrens of New Jersey are tracts of sandy soil, covered with scrub pines and oaks, which extend through the seaboard counties of the state. While they have long been a locality of great interest to northern botanists, their vegetation is so peculiar that the most indifferent must notice the unusual forms it presents. The New Jersey barrens have many plants that are elsewhere to be found only in the pine barrens of North Carolina, and southward, but instead of being, as formerly, the "Mecca of botanists," as good Doct. Torrey used to call it, this region is now penetrated by a railroad, and the passengers get a glimpse of the plants which grow there. In various parts of the barrens, and especially visible from the road, in the vicinity of Manchester, are to be seen in May, great quantities of a most striking plant, about which we have had inquiries, and which is represented in the engraving. If asked its name, a few weeks ago, we should have been obliged to answer that *Xerophyllum asphodeloides* was the only name it had. Now we yield to none in our appreciation of the importance of botanical names, and hold that they should be used when appropriate. We also appreciate the importance of definite common names. We are well aware that the prejudice against botanical names is unreasonable, and do not think they are any more difficult to remember and to use, than others, if one really cares about plants; yet the prejudice exists, and instead of ridiculing it, we think botanists, if they would humor this feeling, would induce many to study their science, who are now repelled by the "hard names." Common names are very loosely applied, some plants have several, and there are a number of common names which are used for several very different plants. The botanist who will take the trouble to revise the popular nomenclature of our native plants, and give it form and definiteness, will do a useful work. After this digression, to come back to our plant; *Xerophyllum*, the name of the genus, is from the Greek words for arid or dry, and leaf; the specific name, *asphodeloides*, means resembling the Asphodel, a garden plant much better known by our grandmothers than it is by us. To make a common name out of the botanical one, it would be Asphodel-like Dry-leaf, which would not be very smooth, or more easily remembered than the botanical name itself. We were a while ago about to describe the plant, and had fixed upon "Pine-barren Asphodel" as the most suitable common name for it, when one of our associates, who had just been to the barrens, informed us that it already had a local name, and was known at home as "Turkey's Beard."—There might be a more pleasing name, but as it has the sanction of priority and local usage, there is no good reason why it should not be accepted, and stand. This name was no doubt given from the resemblance of the narrow dry leaves, to those long coarse bristles which form a conspicuous tuft upon the breast of a mature turkey-cock. The plant is a perennial, with a bulbous base, bearing a tuft of persistent leaves, which are a foot or more long, very narrow or needle-shaped, rough on the margins, and remarkably

INTERIOR OF CONSERVATORY CHAPEL, UTICA, N. Y.

dry and harsh. From the center of this leafy cluster, the flower-stalk arises in May, and in vigorous plants is three or four feet high, and thickly clothed with smaller, very slender leaves. The flowers are borne at the top of this stem, in a dense cluster; they have the general structure of the Lily Family, to which the plant belongs, and though small individually, being less than half an inch across, they form such an ample cluster of pure white, that they are quite showy. The whole aspect of the plant is stately; the tuft of radical leaves, gracefully bending over, surmounted by the conspicuous flower cluster, make it look like an Australian rather than a native plant. It is well worthy of cultivation, and is much better know in European gardens than in ours. The English works advise that it be planted in a very sandy place, but it does not seem to be very particular as to soil; we have it in an ordinary border, where it has been two or three years, and being thoroughly established, it blooms each spring with as much luxuriance as if it were on its native barrens.

TURKEY'S BEARD.—(*Xerophyllum asphodeloides.*)

THE RAMANAS ROSE OF JAPAN.—(*Rosa rugosa.* ?)

The Ramanas Rose of Japan.

With florists roses, provided labels do not get lost or misplaced, there is but little difficulty. If we are only sure that a particular plant is Isabella Sprunt or Perle de Lyon, we do not go back of that fact, but when we come to speak of roses in their natural state, as species, we are at once surrounded by difficulties. The very quality that makes the rose so valuable to florists—its tendency to sport into new forms—is that which makes the plant so uncertain in the wild state. In the limited territory of Great Britain one learned botanist makes but five species of their native roses, while other learned botanists hesitate between 19 and 20 species among the same plants. We mention this to show that it is not surprising, when we came to study up an interesting Japanese rose, that we should be much in doubt what botanical name to give it. But first as to the rose itself, which we met with several years ago in the garden of Mr. James Hogg, to whom it had been sent from Japan by Mr. Thomas Hogg. It being quite unlike any other rose in our garden, we were much pleased to receive in the course of a few months specimens from Mr. Hogg, and also from Mr. John Saul, Washington, D. C., and no roses in our little collection afford us more pleasure than these. Those whose standard of beauty in a rose is the sickly, though fashionable, cream color, and faint-away fragrance of the teas, or who think a rose not worth looking at, unless it is as double as a Drumhead cabbage, will hardly consider this as desirable, but those who can see beauty in a plant, even if it does not have double flowers, will regard it as a fine ornamental shrub. This Japanese rose grows from two to three feet high, and with its numerous branches forms a very compact bush. Its young stems are very downy, and thickly beset with sharp, but weak prickles, of very unequal size. The stems being short-jointed, the ample leaves are brought very close together, and make a dense mass of foliage; the leaves, about four inches long, with (usually) seven elliptical leaflets, which are light-colored on the under surface, being covered with a down of dense, somewhat glandular hairs, and conspicuously veined; the upper surface of the leaves, on the contrary, is perfectly smooth, somewhat shining, and of a very dark green; the surface is strongly marked by depressions, corresponding to the veins so prominent below, which makes the leaves appear plaited, and adds to their beauty. The stipules are comparatively small. Taken as a shrub, without reference to its flowers, its dense habit, and abundance and richness of its foliage, make it a most pleasing object. While other plants in the same bed have been attacked by all the many insects that infest roses, the foliage of this has passed into August without a blemish. The flowers are produced in clusters, at the ends of the shoots of the season, on short downy stalks, and have a globular calyx tube, with (usually) five long-pointed lobes; the corolla is very large, it being three and four inches across, with five or more ample dark rose-purple petals, against which the dark yellow stamens, in a very distinct ring, show with fine effect. The flower has a very marked and agreeable wild-rose fragrance. The fruit or "hip" is completely spehrical, or somewhat depressed, about ¾ of an inch in diameter, of a fine red when ripe, and looking much like a crab-apple. The plants proved perfectly hardy near New York, during the past severe winter. The engraving, much reduced in size, gives the form, but can not convey the rich coloring, or the remarkably robust expression of the plant. The difficulty of applying botan-

ical names to wild roses, has been already alluded to; the present one may be found in the books as *Rosa rugosa*, *R. Fortunii*, and *R. Regeliana*, all evidently the same thing, varying as to the tendency of the flowers to become double; of these names *Rosa rugosa*, the "rough rose," is the oldest; but some botanists say that this is the same as the Kamtschatkan rose, (*Rosa Kamtschatika*), which is a doubtful species. In all this confusion we were glad to come across a name for our Japan favorite, which is quite non-committal botanically. According to Thunberg, who first brought the plant into notice, it is called by the Japanese *Ramanas*, a name which will serve to designate the rose, until botanists have satisfactorily cleared up the matter. We have both the ordinary form with red flowers, and a white-flowered one, of which the petals have a fine, crape-like appearance; the French works mention a double variety, and our's often produce flowers with several extra petals. This rose is a capital subject for experiments in hybridizing; if by this means varieties could be obtained, in which the fine flowers of the remontants and others, were united with the compact habit and robust foliage and healthy vigor of this, it would be a great step in rose culture.

The Failure of Seeds to Germinate.

BY PETER HENDERSON.

I do not remember of any season wherein there have been so many complaints of "bad seeds" as in that just past; while the fact is that probably in no season for the last twenty years have we had better seeds, the previous summer having been one particularly suited to their proper development and ripening. It is astonishing that those who have been workers of the soil for years fail to understand the true cause of such failures. One of my neighbors came to me about the middle of June and complained that his crop of Evergreen corn was nearly a failure, hardly one hill in a hundred being perfect. On examining the patch of nearly an acre in extent, I found it to be a steep slope of rather sandy soil, and that the only perfect hills of corn were at the bottom, a fact that at once suggested the cause of failure. If anything had been the matter with the seed, the failure would have been alike all over the patch, but the failure was partial only in some hills, (towards the bottom), and complete on the dry part of the hill. An examination showed the shrivelled seed in the hills only an inch or so from the surface; it had been literally baked in the soil, which had been dry as an ash-heap from the time of planting until then; and the sun, heating it up sometimes, no doubt, to 120 degrees, had destroyed the life germ about as completely as if the seeds had been thrown directly into fire. Now if my neighbor had taken the precaution to plant his corn two or three inches deeper, or if he had supplemented his shallow planting, of only an inch, by pressing firm his loose, sandy soil with his foot, he would probably not have failed with a single hill of corn. But if failures from this cause occur with such a seed as corn, what may be expected with such fine seeds as celery, carrots, parsnips, etc.? From the same cause, the shrivelling up of the seed by the dry, hot atmosphere of May and June, the crop of celery plants in this vicinity proved to be less than half; with all my experience in such matters, my crop was but little more, entirely due to the shrivelling of the seeds we sowed early, about the middle of April, the ground being in fine condition. Lines were drawn to the depth of about an inch, the seed sown and raked in, not across the bed, but parallel to the lines; this slightly covered the seed, and the ground was then rolled evenly with a light wooden roller. This had been our practice for years, and until this season I do not think we ever failed to have a crop. From the time of sowing until nearly the middle of May, we had hardly a shower that more than laid the dust, and the consequence was that three-fourths of the seed was shrivelled up by the dry, hot atmosphere. About May 15th, (usually much too late to sow celery seed), being convinced that our crop was likely to be a thin one, I again sowed, from the same bag of seeds. This time, however, we took the precaution, after sowing the seed in the drill, to go along it and firmly press the earth over the seed with the foot, it was then scratched over with the rake and rolled. We furthermore shook a thin covering of hay over the bed to shade it, and in two weeks we had a splendid "braird" of plants, having taken the precaution, however, to rake off the hay as soon as the seed had shown itself, choosing a dull, moist day to do so; to have taken off the shading in a dry, hot, sunny day, the plants would have been burned up; they require twenty to thirty hours, in order to get sufficiently hardened to endure the exposure to the sun and air. Now, had I taken the precaution to tread in the drills with the foot with the seeds sown in April, there is but little doubt that the crop would have been a good one; but such dry spells in spring are very unusual with us, and hitherto there had been no necessity, but our experience this year has taught us a lesson by which we are likely to profit. Understand, though, that there must be no firming or treading of the soil unless it is dry; to do this when the soil is at all moist would be injurious. Now the season of sowing our seeds for fall crops is approaching, such as spinach, turnips, etc. We often have long dry spells after sowing, so let it be borne in mind that hardly any kind of seed can germinate if the soil is *loose* and *dry* around it; for garden culture, or in small patches, the ground may be firmed with a spade, or trodden in as directed, and for field culture, rolling to effect the same end is indispensible to success if dry weather long follows the sowing.

WHAT DO ROBINS EAT?—"J. H. K.," Kingsville, O., writes: "A pair of Robins built their nest on the window sill near where a friend of mine works as a mechanic, They were under his observation constantly—he was particular to notice what they fed their young upon. He says for the first week after hatching it was entirely the common black cut-worm, and he is quite sure that they consumed in that time more than one thousand (1,000), and the balance of the time their food was mainly cut-worms. His estimate was based on actual count at different times. This one family of robins consumed cut-worms enough to have made several acres of corn look rather spotted.

Rivers' New Early Peaches in Georgia.

BY P. J. BERCKMANS, AUGUSTA, GA.

The new varieties of early peaches sent out by Mr. Rivers, having fruited with us for three consecutive years, may now be reported upon, as their behavior has been quite uniform, and so far they have been free from the tendency to vary in season of maturity, an unfortunate feature with the Hale's and many of its offsprings.

EARLY BEATRICE.—First production of fruit in 1873. Half-a-dozen specimens matured well, but were very small, and a week later than the first ripe specimens of Hale's Early. This doubtless was due to trees having been planted the previous winter. Second production in 1874. Fruit quite small, very sound, highly colored, and of good quality; matured June 10th. First Hale's being gathered at same date. Third production is of the present year, and from this we note as follows: Size small and medium; shape regular; skin white, nearly covered with crimson and mottled darker crimson, somewhat downy. Flesh pink, veined with darker red, and of very fine texture, juicy, very vinous; freestone, but having numerous filaments adhering to the stone, and running through the flesh. Quality very good; commenced to mature June 9th, crop fully ripe June 18th, or within a period of ten days; whereas Hale's Early, in same soil and under same conditions, commenced to mature a few days before Early Beatrice, and at this date (July 5th) is still maturing gradually. The merits of Early Beatrice may be thus summed up:

1st. The fruit is regularly sound, not a decayed peach was discovered in the past three years.

2nd. Its period of maturity is uniform, not extending beyond 10 or 12 days, allowing the whole crop to be gathered in two or three pickings.

3d. The fruit, although small, is highly colored and attractive, and matures gradually and well after being gathered, a desirable quality when shipping to distant markets.

4th. Early, regular, and profuse bearing.

EARLY LOUISE.—Almost similar to Early Beatrice in shape and appearance, but somewhat larger and not so highly colored. Flesh white, vinous, with still more filaments through it than Early Beatrice, to which it is inferior in quality; quality good; maturity from three to five days later.

RIVERS' EARLY.—Size above medium to large, (average 8 inches in circumference), slightly oblong. Skin greenish white, with a slight blush on the sunny side, very thin, and peeling off perfectly at maturity. Flesh white, melting, very juicy, vinous and highly flavored, with a few filaments adhering to the stone. The whole crop ripens within a week. Quality best. Much superior to Early Beatrice and Early Louise; matures one week later than Early Beatrice. This is the best of the trio, as well as the largest, but its skin is rather thin and easily bruised, which unfits it for carriage to distant markets. For home use it is unquestionably a most desirable variety.

Next in maturity we have Early Albert, Early Alfred, Magdala, Early Silver, all of good quality, but of rather small size, and all superseded by Mountain Rose, which matures at same time.

Following Rivers' Early, we have our Fleitas' St. John, or May Beauty of Louisiana, a very showy yellow-fleshed peach, of best quality. With this also opens the season of Early Tillotson, still one of our best early market sorts, and before the bulk of the crop of that variety is gathered, our early clingstones, such as General Taylor, Tuskena, etc., make their appearance. Of the late ripening varieties of Mr. Rivers, few are valuable for the southern states, so far as one year's fruiting enables us to form an opinion; our good native sorts, such as Columbia and Picquet's, together with our famous clingstones, being of larger size and superior in quality. As regards the very early ripening varieties of peaches produced in England, we may safely consider them as valuable acquisitions to our fruit growers, their quality being doubtless improved, as they are cultivated further south; but it is fallacy to expect late ripening varieties, originated in England, to compete with kinds having had the congenial southern climate to perfect their qualities; a fact now well established by the improved and superior fruits which have of late years been desseminated by our few but zealous amateur fruit growers.

It will Pay.

BY PETER HENDERSON.

A young man writes that he is engaged as a clerk in a Railroad Office from 9 A. M. to 3 P. M., in a large inland town in New Jersey, and inquires if I think it practicable for him to construct a greenhouse, to be worked by himself, before and after office hours, and make it pay a sufficient return on the investment of the necessary money and time. If the time is not used, and can not be used to any better purpose, I think it safe to say that it undoubtedly will pay, if the work is energetically begun and persisted in. Not only will it pay in money, but it will also pay in giving those habits of industry generally lacking in thousands of young clerks who think five or six hours of desk work is work enough. It may be enough work at the desk, but it is not, in my opinion, sufficient to fill up the full measure of industry required from a young man who is sound in body and limb. If he is aiming for success in life, it will not come once in a hundred times by

following the few hours of routine work of an office. A clerk like this has at least three hours before and three hours after the office hours of 9 to 3, which can be used, where it is practicable to do so, in no way more pleasantly than in horticultural pursuits. Sometime last winter I had a letter from a gentleman, who stated that he was a Bank Teller in Cincinnati, and living in the suburbs. He had attached a greenhouse to his dwelling, containing an area of about 500 feet of glass; he began it as a recreation, but it had gradually merged into a nice little business, which, assisted by his wife in selling, had that year added some $500 to his not very large income from the bank. He was quite elated with his success, and expressed the intention of building additional glass this season, with the hope that he might eventually make floriculture his exclusive business. Now what can be achieved by such men with flowers, may be just as well done by cultivating fruits or vegetables. Any active man engaged in an office only from 9 to 3, has an abundance of time in which to cultivate a quarter of an acre of land in fruit or vegetables, the products from which, in almost any town or village sustaining a few respectable grocery stores, will find a quick sale at good prices—prices that, if the soil is good and cultivation thorough, would bring him from a quarter of an acre nearly as much as our Cincinnati friend received from his flowers, though the work would be harder and not so pleasant. Of course this can only be done when there is some member of the family able and willing to *dispose* of the products; for the head of the house is presumed to be engaged at his office work at just the time of day that purchasers would be likely to call.

In my immediate vicinity on Jersey City Hights, though it is within two miles of the Washington Market of New York, I find that the grocers gladly pay one-third more for either fruits or vegetables, taken direct from the gardens, than for the bruised and sometimes stale products of the market, for the simple reason that the consumer is willing to pay a correspondingly higher price for the fresh fruits or vegetables.

The Potato Rot—An Important Discovery.

In an article on Potato Rot, given in July last, it was stated that the history of the fungus of the potato rot was incomplete; that the form of the fungus so destructive in late summer produced its spores, or reproductive bodies, by division of the plant; and that they were not, reasoning from the conduct of other related fungi, the spores which remained over winter, or resting spores. As the resting spores of related fungi are produced, if not by the union of two different plants, they are by the union of two different cells, corresponding to the action of the stamen upon the pistil in flowering plants, and are hence called sexual spores. Some other fungi, when living upon one plant, produce asexual spores only, and the same fungus, living upon another plant, produces sexual spores. In the article referred to, it was stated that the clover had been thought to be the plant upon which the potato fungus formed its sexual spores, and some account was given of the attempt of Prof. Farlow, of the Bussey Institution, to ascertain the truth of this. The present season a potato rot appeared in England, which, while very destructive, presented several features different from the ordinary rot; it appeared much earlier in the season, and confined itself mainly to American sorts raised from English grown seed. While some claimed this to be a new disease, others stated that it had appeared in former years, and that older varieties as well as new ones were attacked by it. In examining this new potato rot, Mr. Worthington G. Smith, an expert fungologist, found the long sought for resting, or sexual spores of the *Peronospora infestans*, or potato-rot fungus. The common, or asexual spores, are produced by the fungus when it appears upon the surface of the potato leaf or stem, while the sexual spores are produced within the tissues of the plant. Mr. Smith feels very confident that he has discovered the true resting spore of the fungus, and publishes his observations with engravings, in the Gardeners' Chronicle, for July 17th, last; he is still at work at it, and we shall probably hear more about the matter. It is too soon yet to say what will be the practical effect of this discovery, in enabling us to avoid the potato-rot, but a knowledge of the enemy in all its forms, can not fail to produce some good results.

Cheerfulness.

Just out of summer, when everybody feels lazy, we dare not impose on our readers a philosophical analysis of this word, but will content ourselves with a few suggestions, and illustrations. Cheerfulness is like sunlight streaming in at the windows, too much of it at midday burns and blisters, whilst the soft rays of the morning purify the atmosphere, and give health and joy to the household. Cheerfulness unrestrained ends in burlesque, and the man who cannot control it, but lets it spurt in all directions, becomes a clown. The genuine article is clear and sparkling, not effervescent and noisy. A cheerful man is not known by constant effort to be funny and dazzling, but rather by the tones of his voice, the spice of his language, and the courtesy of his demeanor. An aroma of sweet joy pervades the whole man, so that in the household, in the factory, in the counting-room, he is as leaven that leavens the whole lump. Age and youth are alike drawn to him, and unconscious to himself, he lightens many a burdened mind, and comforts many a distressed heart. Cheerfulness is the climax of a round of good qualities. If you speak of a merchant, you describe his financial ability, his judgment of men, his knowledge of goods, his great perseverance—but if you wish to finish his character, you say, "and then he is so cheerful." So you speak of a farmer, a builder, a manufacturer—winding up the catalogue of his virtues by adding cheerfulness. And so with the minister of the Gospel, if in addition to his ability as a preacher, and his reputation for learning, you can add that he is cheerful, you have gained your case against his competitor of larger ability, and greater eloquence, who unfortunately has a hard face and morose disposition.

There is Dr. T., a fine example of uniform cheerfulness. We have known him for twenty years, and met him on all occasions; in seasons of sorrow and disappointment; when he was full and when he was empty; when his family was sick, and when they were separated by long distances. Other men, under many of these circumstances, would quail before impending adversity, or manifest desolateness under penury or sickness. Never the Doctor—you might meet him on the street without a penny in his pocket, or preparing to take a new appointment (for he is a Methodist preacher) without cash enough to pay his freight and passage, and you would not discover a break in his countenance. His serenity pervades all events, like an unruffled stream, where deep and clear waters move along grassy banks without a murmer. We love to meet him in the street, for he drops a cheery word; we are fond of his calls in the office, for he always puts us in a good humor, besides his visits are short. Now, as he reads theological and not agricultural papers, he will not see this article, and hence, when we hold him up as a model of cheerfulness, he will not be flattered by our allusions.

We have another visitor, that has been thrown out of a lucrative situation by the death of the proprietor. A young man of energy and promise. We have watched his career closely. Disdaining idleness, he has seized with resolution every opening for employment, not minding what, so it were honest, until at last his energy has won him a position superior to the one he lost. During his struggle his cheerfulness never flagged. Whether we met him on the cars, or in the street, or elsewhere—his countenance indicated a merry heart.

What a happy world this would be if everybody were cheerful! And wouldn't everybody be cheerful but for three things! First, the pangs of a guilty conscience for words and deeds in the past, and second, evil devices concerning the future, and third, constant apprehension of evil arising from distrust of God's Providence. Now, reader, put it down for a truth, that conscious guilt and cheerfulness cannot abide in the same breast. Neither is there harmony between a distrusting spirit and cheerfulness. The sense of the whole matter is this—an evil man may be a clown, but genuine cheerfulness is the inheritance of the good. C. C. N.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

About Washing Dishes.

Mrs. C. S. R., Mansfield, O., writes: The dislike to dish-washing, so common among housekeepers and girls, arises mainly from the fact that it is so injurious to the hands. It is a serious objection to the work, as in the minds of many the preservation of a pretty hand is of more importance than many cups and platters. By the use of what we call a swab, we have so far obviated the difficulty, that the washing of the dishes is preferred to any other household work. The swab may be made on any smooth round stick, about a foot long, and an

DISH-SWAB.

inch in diameter. About two inches from one end cut a groove; take candle-wicking, white carpet-chain, or even strips of strong cotton cloth, and cut or fold about eight inches in length; tie this material firmly into the groove at the middle, and turn down and tie firmly at the end of the stick, and you will have a "machine," which will last many weeks, and go into boiling soap-suds, or even lye, without cringing. In washing the dishes we have a vessel of hot soap-suds, and another, not scalding hot, of clear water. We wash and rinse the dishes, placing them to dry on a cloth spread on some convenient shelf or table. By inverting a few cups at first, the other dishes can be leaned upon them loosely, and more conveniently, and with less injury to the edges, than upon a rack; when dry they will be brighter and smoother, than by any amount of rubbing. [It would appear from Mrs. R.'s note that the dish-swab is not generally known; they are kept in all house-furnishing stores, and we give an engraving of the kind sold there, but of course a home-made one will answer quite as well.—Ed.]

Some Household Conveniences.

BY L. D. SNOOK, YATES CO., N. Y.

A Beef-Steak Pounder.—A friend suggests that a beef-steak pounder should be of hickory, and to be used by placing it upon the fire for some minutes before the stake is put over it. He thinks that a steak which needs pounding is not worth cooking, but he never lived where a real steak could not be bought, where meat is dispensed from the butcher's wagon, and one must take what is offered or go without; slices of beef without regard to the "age, sex, color, or previous condition" of the animal are called "beef-steak;" these when properly pounded before cooking, are much better than no fresh meat. Various iron and other pounders are sold at the stores, but a very cheap one that will answer every purpose, may be made from a piece of hard wood. That shown in fig. 1 has its teeth made by sawing across in such a manner as to

Fig. 1.—FLAT POUNDER.

Fig. 2.—ROUND POUNDER.

leave small V shaped projections, which are afterwards smoothed with a chisel; fig. 2 may be readily made by those who can use a turning lathe.

A FRUIT-DRYER.—For drying fruit and vegetables in considerable quantities, a regular dryer, or drying-house is necessary, but those who have no regular apparatus can dry quite a large supply by using the heat from the stove when that is not otherwise occupied. An open oven, or the warm closet with which the better stoves are furnished, may be turned to good account, and by the use of the frame here illustrated in fig. 3, the drying capacity of a stove may be greatly increased. The size of the frame will be governed by that of the stove, perhaps about four feet square will meet most cases; it should be of 1½ inch stuff; the legs are four feet long, or sufficient to lift the frame well above the stove, and so arranged that they may be folded up and put away when out of use. The frame may be covered by stretching common wool twine from side to side to make a net work to hold the fruit, but it is much better to cover the bottom of the frame with a piece of wire cloth, which may be had

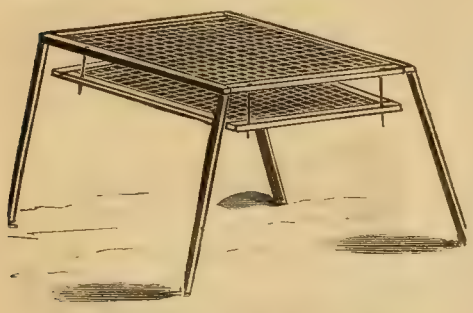


Fig. 3.—A FRUIT-DRYER FOR STOVE.

at most hardware stores. The capacity of the dryer may be increased by suspending a second and smaller frame below the first, as shown in the engraving. The fruit or other material to be dried should be so far above the stove, or the fire should be so low, that there is no danger of cooking or scorching. With a very slight fire the drying will go on with surprising rapidity. Fruit dried by artificial heat is much better than when dried by the sun, as there is no risk of partial fermentation, and it is kept out of the way of flies and other insects.

A KITCHEN PRESS.—The ordinary method of extracting juice from fruits, lard from scraps, and the like, is by placing the material in a strong cloth and wringing and twisting by the main strength of the hands and arms. Screw presses serve a much better purpose, but are more or less expensive. Much aid may be derived from the use of a simple lever press, made upon the principle of a lemon squeezer, shown in fig. 4. The halves are made of oak or other hard wood, two feet long, three inches wide, and three-fourths inch thick. These are shaped at one end into handles, and hinged at the other. It requires two persons to manage this; one to hold the material in the bag or cloth, and the other to apply the pressure. Fig. 5 shows how the same press may be arranged to be worked by one person; one of the halves of fig. 5 is hinged to a piece of board two feet long and fourteen inches wide, and set upon a table with one end elevated in the manner there represented.

Home Topics.

BY FAITH ROCHESTER.

Helping a Husband.

Isn't there a universal groan going up because it is so hard to get a living? People who are already rich—especially if they got their wealth by speculation or by public office—put on airs of wisdom, and assure the poor that nobody need remain poor. Only let them live economically; wages are good; by saving a little every year any one can soon get rich. But the man with a growing family can't always see this. He wants books and papers, and music and pictures in his home, and he thinks his family has as much need of their refining influence as any other family. He loves to see his own wife dressed in good clothes on Sundays and holidays, and he knows that she is best pleased with him when he is well-dressed, and both of them wish to give their children the best opportunities for good health and a good education. His own wages are

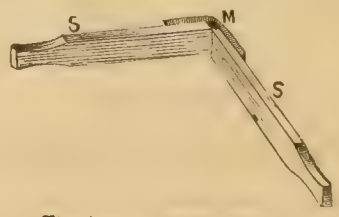


Fig. 4.—A KITCHEN PRESS.

hardly sufficient to cover all these expenses. How can his wife help him?

In former times she did all of the work of the family, not only the cooking, and washing and ironing, and sewing, but also the spinning and weaving of cloth, and soap-making, and fruit-preserving, and candle-dipping. Some say that we must go back to that kind of life. Others tell us that such retrogression would not pay, even in dollars and cents, but they say that now women are relieved from so many of the old labors by the work of factories, they ought to engage in the mechanical, mercantile and professional kinds of business, so that they may not only support themselves while single, but help to fill the family purse after marriage. It does seem best that every young woman should be prepared to earn her own living, as a part of her education; and that she should support herself by her own labor if it falls to her lot, either through necessity, as in the cases of most working girls, or through natural adaptation and inclination, as in the case of Clara Louise Kellogg, Gail Hamilton, or many an obscure doer of good work.

But it surely is not best, as a general rule, that wives should be expected to earn money by any regular business, especially if they are mothers. There may be circumstances of sickness or debt, or poverty, which make it seem necessary for a mother to do this, but the home care of her husband and children is business enough for the mother of two or more children, and if the actual labors of house-keeping are added to this home-making business, and if both are done well, there is cer-

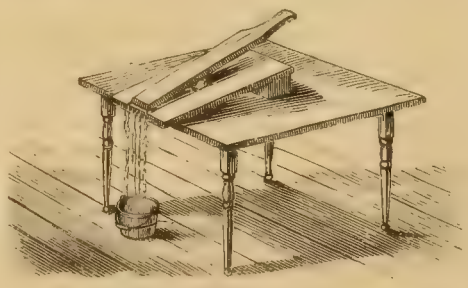


Fig. 5.—PRESS ON TABLE.

tainly not strength to spare for any other regular occupation. A man who wants to have a good natured wife, ready every day to give him that smiling welcome—which is the old recipe for keeping him from making a drunken brute of himself—had better see that his wife has some leisure and some rest. These remarks apply not only to the woman who leaves her children in the care of strangers, while she goes about the country delivering lectures, or rides by day or night to visit sick patients, but quite as much to the farmer's wife who has the care of a butter-making business imposed upon her by her husband, or who, sick or well, has to work with might and main through all the hottest season, to take care of the various kinds of fruit which her husband has planted, in the cool expectation that the women-folks will do the main part of the fruit-picking and preserving, or marketing. If a wife has time and strength to devote to it, the butter-making or fruit-drying business is a good one, but I wish the "conservative" brethren to see that a wife and mother, who has to neglect her real home work, her loving care and genial companionship as mother and wife, to help along in what he calls *his* business, is just as much out of her proper sphere as the mother who teaches school or delivers lectures. He had better consider, too, how far this applies to the business of taking boarders.

Why need we try to get rich? Why not begin to *be* rich instead? Instead of bending soul and body to the task of getting a living, why not begin to live?—for there is considerable difference between living and getting a living. Dwellers in the country have no pressing need of costly paintings, if they make the most of their sunrise and sunset views, and there is a deal of the best of music to be had gratis. Let us rest from our digging and delving a little while every day and look about us for something beautiful, and listen for something musical, and ere long we shall find it in our own children's bright and loving glances, and in their happy voices. Let us have something to read, and little family treats of one kind or another in the way of innocent diversion, whether any money goes into the bank or not. I see less reason, now-a-days, for us to worry about laying up money to send the children to college, since free schools of every grade are becoming more and more common, and since the best libraries are open to the public. The main point is to make comfortable homes for our little ones, until they are old enough to look out for themselves; to keep as sweet and wholesome as we can the little corner where our work is set, and to do our daily tasks as faithfully and cheerfully as we are able, with faith in that Infinite Goodness which overrules all.

The Baby-Jumper.

At last I have my baby's jumper in use again. It is such a simple contrivance, it seems a shame that baby should have been obliged to live two months without it, just because, after our removal and in papa's absence, we never were quite able to get the jumper in jumping order.

I hear of various baby-jumpers, some of which must be very nice and convenient, but they are all more or less expensive, while our baby-jumper did not cost a penny's outlay. I have never seen another like it, but I had the description and the jacket-pattern from a neighbor, who had given two or more of her children the benefit of such a jumper.

It is a benefit to both mother and child. Indeed it is a benefit to all beholders, to laugh with baby when he dances about and bubbles over with the delight his own antics give him. My neighbor tells me that her little one, scarcely nine months old, sometimes stays contentedly in his jumper for an hour at a time, taking his exercise or resting at ease, while her hands are free to do the work of the family. Even after a child has learned to walk, it likes its jumper, and dances about, picking up its playthings from the floor, or leaning over to play. The exercise seems very wholesome and strengthening to every limb. When you have buttoned the jacket on the child, it is already in its seat, and this is buttoned to the straps of the jumper by four strong buttons at the shoulders. My baby's jacket is made of strong double linen. It may be as ornamental as you choose, and the straps and hoop may be as gay as you like. I took a barrel hoop, and wound it first with black and then with a narrow strip of scarlet flannel put on so as to give the hoop a striped appearance. The hoop serves to hold the supporting straps apart, so that baby's seat in the jacket is comfortable. The clothing should be smoothly arranged, protecting the legs properly, before the jacket seat is buttoned. The spring-pole, to which the jumper is attached, is usually of hickory. It must be fastened to the ceiling in two places, at least a yard apart, by strong staples, or screws if possible. My neighbor's, being in a room with convenient beams overhead, is fastened up with two crotched sticks nailed to the beams. I thought I could make an elastic strap do instead of a spring-pole, and I sent for such a strap and a strong hook—and "thereby hangs a tale."

When Mr. Rochester came home for Christmas, loaded with the Christmas gifts which we had been talking about in our letters, he handed me, among

other things, a big primer, gay with pictures of animals, saying, "and there is the picture-book for baby."—I was surprised, since none of the older children had books last Christmas, and in answer to the expression of my face, "papa" said, "You wrote me to get him a story-book—isn't that right?" The book was all right, but I had never suggested it. As soon as there was leisure he consulted his

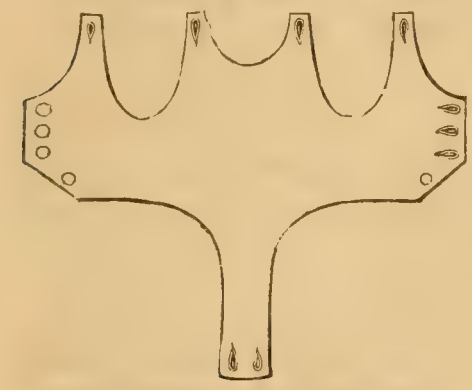


Fig. 1.—PATTERN OF JACKET FOR JUMPER.

letter of "instructions," and triumphantly showed me "story book." Behold it was (or was meant to be) "*strong hook* and elastic cord, so that a jumper may be baby's Christmas present."

Since one who knows my hand-writing so well made such a funny mistake, I can't blame either printer or proof-reader, if, in the June *Agriculturist*, I was made to speak of my children as "never-weaning," instead of "nerve-wearing"—the latter term being one which a relative applied to the little questioners. In this case, however, one term is almost as applicable as the other. I try to write plain, but I often write in such haste that it is only surprising to me that my manuscripts do not get into print far more topsy turvey than is the case.

In asking for an elastic strap, I had in mind such a rubber-strap as doors are sometimes supplied with, to ensure their prompt closing in musquito-time. None such was obtained, and the common cotton elastics supplied instead, did not answer. The simple spring-pole does work well.

I give the jacket-pattern (fig. 1) with the foregoing description. My own is 27 inches around the body, and 19 inches from the middle of the back to the end of the piece that buttons up to the front. The whole jumper is shown in fig. 2.

The Adaptability of the New Under Garments.

The "Emancipation Suit," with its loosely-fitting basque-like waist, seems just the thing for a woman of good figure to wear in her usual condition of health, but it seems open to some objections from mothers, who sometimes have to change the style of their clothing. The "chemile" is more simple in construction, and made of common bleached or unbleached muslin, is no doubt quite comfortable and convenient. It is more like the night drawers worn by children, quite loose about the waist. I have seen, however, a small model, devised by the inventor of the emancipation suit, of a garment made with especial reference to a woman's comfort at a time when she has unusual need of comfortable clothing. If such garments could be obtained ready made, (and I do not know but they are already furnished by the Dress Reform Committee, of Boston), I think that women who buy ready-made clothing, would be glad to purchase two or three such suits, at a time when sewing-machine practice is often dangerous. These garments, which can be made looser or tighter at will, as corsets are drawn up or loosened, would save making any alterations in under clothes, and would be convenient in every way for mothers with young babes.

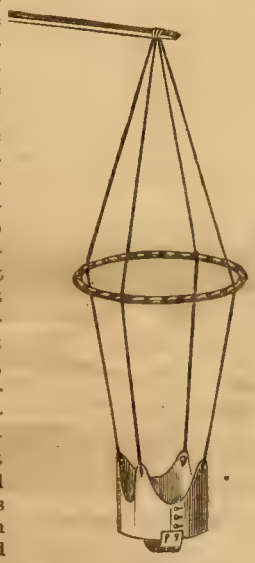


Fig. 2.—BABY-JUMPER.

Trying to Economize.

"Why need you buy yeast cakes when you can make just as good yeast?"—says the old-fashioned housekeeper; and the modern housekeeper feels condemned for her extravagance, unless she stops to count the cost of home-made yeast, and compares the difference between that and the purchased packages. I am told by those who have reckoned the expense of home-made yeast, that it is no cheaper than the yeast cakes sold at the shops, not counting the time and the trouble caused by yeast making at home. The trouble of making and keeping yeast is considerable, so it seems to me that housekeepers who have plenty of useful occupation, need not feel at all conscience stricken on account of buying good yeast. For more than a year I have relied exclusively upon yeast cakes, and I have learned to place great confidence in them. Those that I use are made in a neighboring city, and have a good reputation in this part of the country. By observing the directions printed upon the wrapper, one may be sure of good bread, provided the flour is good and the kneading and baking are properly done.

And there is the clothes-line. I leave mine, a common fine rope, tied to the posts, week after week. I used to feel condemned for wastefulness, knowing that sunshine and rain would make the rope decay. But now I justify myself in this course. It takes too much time to put out and take in the clothes-line every week; it is not worth the trouble. I am told that one rope will last a housekeeper's lifetime, if properly cared for. But I feel sure that my lifetime would be a very short one, if I should pick up and carry every burden of that kind which I can see lying around, for the sake of saving here a penny and there a penny. I refuse to sacrifice myself to that clothes-line. Besides I like to have it where I can use it at any moment, for airing bed-clothes, or drying anything washed between regular washings.

And there is the pin-paper. I have heard of one woman who has been married ten years, and had never used up the first paper of pins with which she began housekeeping. I often think of her, for now that my little girls are in the early stages of dolly dressing, pins are in such demand that one paper of pins scarcely lasts a month. It is strange where they go to, for I always pick up every pin I see when I sweep, and each child has a pin-ball or a pin-cushion to carry all that it can find upon the floor. I know that if all the buttons were in their places on all of the little garments, fewer pins would get lost, but there are so many buttons to look after! Couldn't I make the two eldest children begin already to sew buttons on their own clothes? I can't refuse the children pins, though I know they lose almost as many as I furnish, but little by little they learn to use them more carefully. Presently there will be the same trouble about needles, when the girls have fairly begun to make their dolls' clothing. I think they must have their own needles, with safe places for keeping them, and not touch mamma's needles and thread without permission. To refuse to let small children have pins and needles to use—as the manner of some is—seems to me not economical, but stingy.

Economy is an excellent thing, and very necessary for most of us to practice, but good judgment must go along with it. I often express my gratitude that I am not cumbered with many "nice things," while my hands are busy with the babies; it is so hard to take care of things that cannot well be kept beyond the reach of children, but which children can easily despoil.

BOYS & GIRLS' COLUMNS.

September.

In our notes of the months you have seen that they have been named either after some person, or after some heathen deity. In olden times several of the months were known by numbers; we told you that August was formerly the sixth month, but that it was changed to flatter Mr. Augustus. The seventh month, the year beginning with March, was called September, *septem* being the Latin for seven, and fortunately no Roman emperor has taken away the name and put his own in its place—fortunately, because September is a good, round, full sounding name, and a great deal pleasanter to the ear than July or August. In September the Jewish year begins, for you know that the Jews have their own way of times and seasons; with them the 12th of this month will be the beginning of 5634. How strange it must seem to have New Year's day at that time, and when our year is approaching its end, to be talking about beginning the year, and to wish one "A happy New Year" when the days are warm and flowers are plenty. September is the season of ripeness, the time of growth is over, and the red cheeks on the peaches and apples, the bright tints on the sumachs, and a hundred other signs, show that summer is over—yes, and in this month, too, school begins, and vacation is over as well as the summer. Now for the books and studies, which will be taken up with new interest after the long rest.

No. 445.—PUZZLE PICTURE.—The cat does not see it. Do you?

What is Papyrus?

A little miss, who has found *papyrus* mentioned in one of her books, wishes to know what it is. Papyrus, in the first place, is the name of a plant, and secondly, the name of a kind of paper made from it. Indeed, it was the very first paper; before this, the little writing that was done, was upon tablets of stone or wood, plates of lead, and even layers of wax. Papyrus was not only the first paper, but it gives the name to the kind we now use. Our word paper comes from papyrus, which is an ancient Greek name. Before I describe how papyrus was made, I must first tell you something about the plant itself; it has been called a grass and a rush, but it is neither, but a sedge, which grows in the Nile and other rivers. We have a plenty of sedges in this country, but none of them so large as the papyrus; some of them at first sight seem very much like grasses, but a close look at them will show that they are very different. The stems of grasses are never three-cornered, while those of the sedges usually are, and when you come across a grassy-looking plant that has a three-cornered stem, you will be pretty safe in saying that it is a sedge, and belongs to the same family with the papyrus. In my greenhouse I keep a number of plants just to show my young friends who come to see me; I have the tea-plant, the coffee plant, the pepper-plant, and others that are interesting, because they are useful, and among other curious plants is the papyrus, or paper-reed. I formerly used to plant it out in the lawn, where it makes a very fine show, but the autumn winds break it so badly, that I have concluded to keep it in the house altogether. I have said that the plant grew in rivers, and you will wonder, how a water-

plant can be managed in a greenhouse. All that it needs is to be kept well supplied with water, so that it will not become at all dry, and it will flourish without a river full. Here is an engraving made from some stems of my plant, that will give an idea of how it looks. In warm countries, and growing in the water, its stems are often 15 feet or more long, but in the greenhouse they are not over four feet high. At the bottom of the stem are some short leaves, which cling to it like a sheath; there are no

THE PAPYRUS PLANT.

branches, except at the top, where it bears a large, handsome tuft of slender branches, upon which are the small clusters of greenish flowers. The plant, besides being interesting on account of its history, is really attractive and graceful. You will perhaps think that to make paper from this plant, it was ground up in a mill, just as rags now are, but the process was much simpler, and, though very slow, required no machinery other than a knife. The paper made from it being called papyrus, as well as the plant, I will now use the word as meaning the paper. The stem first had its rind removed, and the central portion, or pith, was carefully sliced lengthwise, making very thin slices; these narrow strips were placed side by side on a smooth table, with their edges close together, until they made a piece about a foot wide; then other pieces were laid upon and across these, their edges touching in the same manner. The sheet was then sprinkled with water, and pressed by putting on a broad board and heavy weights; after it was properly pressed, it was then hammered with wooden mallets, and when dry, finished by smoothing it with an ivory instrument. It is said that the strips of the best papyrus would stick together by a gummy matter contained in the plant itself, but where this was not sufficient, some kind of glue was used. So you see that the first paper was really pith made solid by pressing and hammering, and given a good surface by rubbing until smooth. The sheets, though only a foot wide, were made of any desired length, one 23 feet long has been found. They were not cut up and made into books, but were rolled, and when read, the papyrus was gradually unrolled in one hand, and rolled up in the other. It is not known when papyrus was first made, but it was several hundred years before Christ, and some antiquarians claim that Memphis in Egypt was the place where it was invented; it remained in use until the eighth century, when it gradually gave place to parchment, which you know is sheep-skin prepared for writing upon, and is in use for some purposes at the present day. The ancient papyri, (plural of papyrus), found in the Egyptian tombs, and in the ruins of Herculaneum, were some of them in very good preservation, while others were so brittle that they could not be handled until first moistened by steam. THE DOCTOR.

The Fice Question.

Perhaps you will recollect that in my "Answers to Correspondents" in July last there came the question "What is a Fice?"—not being able to give a satisfactory answer myself, I asked some of my boys to help me—it being more likely that boys would know more about it than girls.—I tell you what it is, boys, a paper is a wonderful thing; (and of course I think the *Agriculturist* the most wonderful of papers, only I had rather some one else would *say* it.) I have long had a belief that if a thing could be found out at all, it could be through the *Agriculturist*. I have tried it many a time, simply putting in a question of two or three lines asking something I wished to know about. Then it is fun to see the answers come in; those from the eastern and middle states first, then from the states at the south, until we reach the Gulf of Mexico; then from the west, and farther west, until the shores of the Pacific send in their answers. After this come our outlying provinces. Answers come from various parts of Europe, from Asia, from Australia, New Zealand, and Japan and China, send along their contributions. When a youngster, I used to think how fine it would be to have Aladdin's wonderful lamp, and with a rub call up mighty genii and all that sort of thing. But it is quite as wonderful, to sit in the office, and with a scratch of the quill, bring answers from all over the world. It does not summon genii, and the answers are slower in coming, but they are a great deal better when they do come; genii are well enough in the story, but real boys and girls are much pleasanter company. But I did not start to tell you of the wonderful power of the newspaper, only the question about the Fice suggested it. A schoolboy in Salt Lake City does not know what a Fice is; he writes to "The Doctor," in New York, who does not know, so the Doctor plays Aladdin, and rubs on his wonderful lamp, the *Agriculturist*, and waits. After a while the genii—I mean, of course, letters from the youngsters—begin to come, they come from North and South Carolina, from Georgia and almost every southern state, including Missouri and Texas, and if The Doctor now doesn't know what a fice is it won't be because the boys have not tried to tell him. One of the answers was from a rather "old boy," and oh, so long! I think it would, if printed, fill nearly one of these pages, too long, and not quite in the style that would suit young folks. I select from the several answers the two which will best meet the case, and thank the others who have kindly helped. I give first a reply by M. Hightower, Texas, who writes: "There are a good many fice in this country. A fice is a very small common cur dog I think, that from some cause has degenerated in size. They are about the size of a small lap-dog, but differently made, having small, keen limbs and body, and erect ears. They are very noisy, and pretend to be very brave. Nothing seems to please them better than to be at a meeting of several large dogs. If there seems to be any disposition among the large dogs to fight, the fice is immediately in his greatest glory. He erects his ears and tail, begins to growl most savagely, flies around among the big dogs, scratches up the ground, and uses every art to bring on a fight. He has not courage enough to take the responsibility for a disturbance upon himself, but if there happens to be any particular dog in the crowd that all the others seem to be angry with, he soon finds it out, and will probably slip up behind that dog and slyly pinch him, and slip back among the crowd, and this he will repeat several times if necessary, to bring on a fight. The big dogs rarely ever bite a fice. He is so small that they seem to think it beneath their dignity to notice him, and he seems to know this, and being aware that he is not in any danger, he acts as he does. The Georgia boy meant by his comparison that the one to whom he applied it was pusillanimous."—So much for Texas, we will now hear what Harry Stribling, of South Carolina, knows about the fice: Harry writes: "Father says that with us a fice is a mixture of any of the smaller dogs. The one thing he is good at is getting up a big row among big dogs and then sneaking out just as the snaps begin. We have some boys with us that we sometimes call "ficety," they are those enthusiastic, knowing kind of boys. Sometimes they grow up in this nature, then we call them fice-dogs. Mr. R., who lives near a church, has one of these smart fices, and on one church week it so happened that most every day some preacher drove up in his buggy to Mr. R.'s house to take a meal, and this fice was called upon to catch a chicken. The next week my uncle, who was not a preacher, drove up to Mr. R.'s, and no sooner had my uncle stopped, than the fice went for a chicken, but he was too ficety that time, as my uncle did not stay for dinner."—Harry gives us a new adjective, "ficety," which none of the others use. All the letters agree in giving the fice a mischief-making character, and that he is always ready to promote a fight, and to back out as soon as trouble begins....It seems that fice is after all only a local name for a small cur. THE DOCTOR.

How I Learned to Swim.

[The following comes from one of the friends of our boys, but reached us just too late for last month. We give it now, and those who live where the swimming season ends early in September, can make a note of and remember it for next season. The plan is a very good one, and few know, until they have tried it, how slight an aid will keep one afloat.—ED.]

When I was a boy, I learned to swim by means of a swimming board, such as is shown in the sketch. This is the safest method possible. If corks are used, they may slip from around the breast down beneath the body, throwing the head below the surface, and putting the wearer in danger of drowning. Some country boys get two bla ders and tie them together with a short cord, and use these as supports. They are the most dangerous things possible for a boy to have. The board is perfectly safe, and one may learn to swim in a very short time by using one. It should be about 4 feet long, over a foot wide, and two inches thick, made of soft white pine or

SWIMMING BOARD.

cedar. To use it, a boy wades out into the water up to his shoulders, then taking hold of the end of the board, as shown in the engraving, he pushes it before him—towards the bank and not into deep water—springs forward with his feet and throws himself flat upon the water. This movement carries him along a few feet. He then draws up both legs at the same time, keeping the knees as far apart as possible, and then strikes out with both feet, not straight backwards, but sideways, just as a frog does. The stroke is made slowly and is repeated again, drawing up the legs slowly and steadily. The board keeps the head above water. When the leg stroke has been learned; one hand is taken from the board and the stroke learned, or the chin may be rested on the board while the stroke is made with both hands. This is a very good plan, as it compels the swimmer to keep his

SWIMMING WITH THE BOARD.

hands under the water, which he should always do. By-and-by the board may be pushed ahead, and the young swimmer may swim after it, always keeping it within reach. When a number of boys go to swim, although they may be good swimmers, they should always have two or three of these boards with them for use in case of accident. S.

Answers to Correspondents.

BY THE DOCTOR.

I have not had so many questions lately as in the earlier months. Boys and girls do not care so much about the "why and because" of things in the hot days of July and August, as they do in cooler months, and I do not blame them. I like youngster's questions better than I do those of older people, as they go directly to the point, and do not write half a page or more in telling why they ask, instead of asking at once. I am always glad to get your questions, as then I know what you are reading about and thinking about, but I cannot always agree to answer all that you ask; there are some questions that cannot be answered properly, unless the one to whom the answer is given knows more than boys and girls are expected to know. Here is a case in point.

SUN DOGS.—"A Farmer's Boy," Sterling, Ill., wishes to know "why sun dogs appear in a cold morning, and not in a warm one."—If I were to answer, because there are no crystals of ice or snow in the air on warm mornings, but there may be on cold ones, it would be quite correct, but not very satisfactory. In order to answer in full, so that "Farmer's Boy," and all the other boys, as well as the girls, could understand it, a page or more would be required, and then I should have to suppose that you knew more about light than most old folks do. So this is one of the cases in which I must ask my young friend to wait until he gets older, for a full account, which he will find in the works about light. Perhaps some of you do not know what "Farmer's Boy" means by "sun dogs." It is another name for mock suns, which are bright spots seen near the sun, the scientific name of which is *parahelia*, from Greek words meaning *near* and *sun*. I can now only say that they are formed by haloes crossing one another, and that haloes are rings around the sun, produced by the action of the ice crystals upon the light.

AUTUMN LEAVES.—Alice B., of R. I., wishes to know about preserving autumn leaves. Alice is right, it is best to begin early, as some of the most beautifully tinted leaves are to be found before the general coloring of the forests takes place. Frost has little to do with the coloring, and leaves that have been frosted do not keep nearly so well, as those that have ripened into beauty without it. The first step is to collect the leaves, and perfect form is as important as beauty of color; when you collect them, although colored leaves are so abundant, you will find it more difficult than you supposed to get those which are quite perfect in shape. The next thing is to dry them as rapidly as possible. Where only a few are to be dried, some large book that is of no value, is the handiest. Have the book perfectly dry, and it is all the better if a little warmed, by placing it near the stove. Place the leaves between the pages of the book, not too many together, and have a plenty of the pages between each lot. When the leaves are in, shut the book and place a weight upon it; other books will do. The next day at latest—and if the leaves are put to press in the morning, better do it the same evening—change them to another book, press in the same manner, and lay the first book—open—in a warm place to dry. Make this change every day, until the leaves are thoroughly dry, which may be known by their brittleness. Keep the leaves in a book until you wish to use them. The collecting season will last until hard frosts. Try and get a great variety of forms as well as of colors, and look out for a plenty of small leaves, to work in with the larger ones; little twigs with small leaves attached, should be gathered when found. When they are made up with ornamental work, the leaves are usually oiled, to brighten the color; last fall I hit upon a plan that I think much better than that, and which I will describe another time.

DO CUCUMBERS GROW IN THE SEA?—"G. C. G," Yes and no. You have no doubt seen the "Sea-cucumber" mentioned somewhere, and thought it might be some kind of a plant. It is really an animal, like a great fat worm—only it is not a worm at all. There are a number of these strange sea animals that we shall tell you about before long, and you must wait until then to know more about the sea cucumber.

"JOHNNY-JUMPER."—Sarah M., wishes to know why the Pansy is called "Johnny Jumper." Who can tell the "why" of most of the common names of plants? I never heard that name given to Pansy, except in those parts of New York and New Jersey, where the original settlers were Dutch, but I do not know that it is of Dutch origin. The Pansy has more curious names than any of our garden flowers; even Pansy, its most common name, is from the French word for "thought." Some of the flowers have a very human expression, and perhaps some of them look as if they were thinking of something. I have a list of some of the names given to the plant in England, and here are a few of them, "Cuddle me to you," "Love in idle," "Three faces under a hood," "Kiss me at the garden gate," "Pink of my John," "Jump up and kiss me."—By the way, here's a discovery! Look at the last two names, the end of one and the beginning of the other, "John" and "Jump up." I never thought of it before, but it looks as if your Johnny Jumper, may have come somehow from the mixing of two of these old English names. This guess is the best I can do for you, Miss Sarah.

Aunt Sue's Chats.

E. G. H. writes—"We have had a problem given to us, but I think it must be misstated. Will you kindly assist us to a solution if there is one?—'A man had three sons, A, B, and C. He gave to A. 10 eggs; to B. 30 eggs; and to C. 50 eggs. They were to sell them at the same prices, and each was to bring home the same amount of money, (without any collusion.')—Now, Aunt Sue, is that possible?"

Yes: they sold their eggs at the same prices, but not in the same proportions. They sold their eggs, some at 7 for 1 cent, and some at 3 cents each; and they each brought home 10 cents. Thus:

A. sold—7 eggs at 7 for a cent	1 c.
3 eggs at 3 cents each	9 c.
10	10 c.
B. sold—28 eggs at 7 for a cent	4 c.
2 eggs at 3 cents each	6 c.
30	10 c.
C. sold—49 eggs at 7 for a cent	7 c.
1 egg at 3 cents	3 c.
50	10 c.

and so you see each boy sold his eggs at 7 for a cent, and at 3 cents each, (not a very *reasonable* performance,) and each brought home ten cents.

E. S. W. says: "Will you tell me the sense of 'halcyon days'? Lizzie heard the grown folks talking about it, and 'didn't like to ask them what it meant.'"—Yes, dear, I am always ready to tell all I know, (it takes me such a little while.) "Halcyon days" means days of peace and serenity; and the expression is derived from the fact that the kingfisher (or *halcyon*), possessed, I suppose, of an instinct which tells her "when," builds her nest and sits on her eggs during a calm which is sure to last fourteen days. Old fables said that the bird made her nest on the surface of the sea, and had the power to charm the waves and winds to rest. So that with some fact and much fancy, "halcyon days" has at length grown to mean a season of peace and happiness.

JOSIE S. D. says she has "seen some sweet little pressed flowers stuck on rice paper," and wants to know if the paper is really made of rice, and if I can tell her how to make it. To the best of my knowledge and belief—Josie—there is no *rice* about it. It is merely the pith of a tree, which is a native of Formosa—and a very pretty tree it is too: it has such large handsome silver-gray leaves, that gardeners grow it in greenhouses in winter, and set it out in spring to ornament the garden. The stems of this tree contain the finest kind of pith, which, when cut into sheets, and flattened out, make the delicate paper used by the Chinese for their ornamental painting, and some of it is brought to this country and sold to those who make fancy work. One of the chief uses of rice-paper is to make very choice artificial flowers, for the delicate texture of the pith comes nearer to that of some flowers than any other substance. If you will send me your address I will send you some rice-paper, which will perhaps be better than telling you "how to make it."

HARRY—The reason "so many Chinese names begin with 'Ah'" is because "Ah" is the Chinese title corresponding with our "Mr." "Sing" is as common a name with the Celestials as "John" is with us.

Aunt Sue's Puzzle-Box.

NUMERICAL ENIGMAS.

1. I am composed of 14 letters.
   My 10, 2, 9, 1, 11, 12, 13, is a biped.
   My 2, 6, 13, is its mother.
   My 14, 11, 9, 13, is part of the body.
   My 8, 12, 6, 4, is an animal.
   My 5, 3, 7, 14, is liked by boys.
   My whole is the name of a writer. L. C.
2. I am composed of 28 letters.
   My 1, 12, 23, 15, 3, is prodigality.
   My 2, 7, 11, 14, is a useful stone.
   My 5, 9, 18, 17, 25, 25, 26, 28, 15, is "very good."
   My 16, 8, 4, 13, 7, 19, is a painful emotion.
   My 20, 24, 22, 18, 25, 5, is often seen in winter.
   My 24, 8, 13, 28, and 21, 10, 27, 6, 23, cooked together, form a popular dish of Indian origin.
   My whole is a biblical statement of an agricultural maxim. GAY.

CONCEALED BOOKS OF THE BIBLE.

1. John and Agnes are taking singing lessons. 2. Those are Mary's books and pictures. 3. Would you rather rest here or go further? 4. This is a most delightful spot. 5. Robert, did you jam Esther's hat? 6. Tom says it is a fact, so you need not deny it. 7. Now, Lulu, keep quiet, and do not fidget. 8. If you will use the mat, the women will be grateful. 9. I heard a negro man singing "Home, sweet home." J. E. G.

CHARADES.

1. My first is a boy's nickname,
   My second is the same,
   My whole, not unknown to fame,
   A full one doth remain. M. R.
2. My first, with some, has magic power
   To wile away a tedious hour:
   My second aid the steam-drawn car.
   Bear friends to friends, or foes to war;
   And for my whole, old favorites still
   Discarded are, at fashion's will. E. L. K.

ANAGRAMS.

1. Curb Bess, Sir.
2. O! Strides on mud.
3. I hide bugs in salt.
4. Set for tea.
5. Ever most dear.
6. Screen curer.
7. Tell Ben, O! Ira.
8. Brave iron trees.
9. My rich lath.
10. Nestle in mat.

PLANTINGS.

(As these may not be familiar to all puzzlers, I will give a hint or two on the subject. Plant a vehicle and a people, and what will come up? Ans. Carnation.—Plant some confectionary and an Indian's scalp, and what will grow. Ans. Candytuft.)

1. Plant a carriage and your grandmother, and what will come up? 2. A planet, and something used in cooking. 3. A bush and a wine. 4. An animal and a misstep. 5. A body of water and a girl's name. 6. Some porcelain and a millionaire. 7. Dawn and what warriors love. 8. Part of the foot, part of the body, and an exclamation. PUSSY WILLOW.

TRANSPOSITIONS.

1. Transpose an animal into what a goose is, now behead and leave a bird, A. M. NAGEL.
2. Transpose a ruler into what he told his army to do. BELLE.

PUZZLE.

Take an active little insect,
A circle, and a measure,
And add a wholesome beverage
We often sip at leisure,
And right before you there will be
A safeguard used on land and sea. A. SAVINNE.

CROSS WORD.

My first is found in ankle, not in foot,
My next is found in shoe but not in boot,
My third is in the mind but not the heart,
My fourth is in the coach but not the cart,
My fifth is found in sugar, not in tea,
Without my whole this riddle could not be.
LITTLE ONE.

DOUBLE ACROSTIC.

The initials and finals name *an* initial and final.
1. A boy's name. 2. A machine. 3. A long stick. 4. Suspend. 5. A man's name. YANKEE DOODLE.

PI.

Eppole tunco pu het saflut fo sohet how peek hem ingitwa.

ANSWERS TO PUZZLES IN THE JULY NUMBER.

CHARADE.—Patchouly (Pat-chew-Lee).

SQUARE WORDS.	CROSS ACROSTIC.
1.—F A C T	C A T
A B L E	I L L
C L A N	E L I
T E N D	S I M P E R I N G
	A L L E G H A N Y
2.—D U K E	S O U T H E A S T
U R I M	N A T
K I N E	I N N
E M E U	A Y E

CROSS WORD.—Parepa Rosa.

NUMERICAL ENIGMAS.—1. North Carolina. 2. All are not thieves that dogs bark at. 3. A little body doth often harbor a great soul.

PUZZLE.—COLD.

WILD-FLOWER ANAGRAMS.—1. Trailing arbutus. 2. Solomon's seal. 3. Cardinal flower. 4. Meadow beauty. 5. Dandelion. 6. Loose strife. 7. Arethusa. 8. Golden rod.

ANAGRAMS OF THE NAMES OF THREE CELEBRATED PHILOSOPHICAL WRITERS.—Bacon, Locke, Boyle.

Thanks for letters, puzzles, etc., to Jennie Wren, G. H. W'Son, J. C. L—h, Mrs. M., Eddie, M. C. D., and Mary Gold.

Having A Good Time.

If there is any season of the year when boys and girls can have a good time—if they only know how—it is in these days of summer and early autumn. The country youngsters have generally no school, and so no lessons to prepare, and a good part of the work that is expected of them, is about as much fun as work. Then the city youngsters, also without school, take this time to visit their country cousins, and city boys and city girls, meet country boys and country girls, and the two have a better time than either would have by themselves. The youngsters from the city have many things to tell about that those living in the country never knew or heard of before. We can not always have pleasant days in the country, and the stormy ones, while they prevent out-door fun, need not by any means be unpleasant. One good thing about country houses is, they generally have a garret—indeed, it is a poor sort of a country house which hasn't that children's paradise, a garret. When the vacation is all done, and in both city and country you think over the good times you had last summer, you very likely will not remember anything with more pleasure than the rainy days in the garret. If you shut your eyes and try hard, you can hear the rain as it made such music on the shingles, a sort of quiet accompaniment to the voice of city Sue or Ben, as they told of city wonders, or country Jane or Charlie, as they told of how they got lost in the great snow storm of last winter, in coming home from school. Ah yes, those rainy days in the garret, or in the

hay-mow, where there was the same rain music on the roof, you will think of those, and say to yourselves, "Then we were really having a good time."—There is no end of ways in which boys and girls can have a good time, if they only know how. Having a good time doesn't very much depend upon what else one has. If one's parents are rich, and can afford pony carriages for the girls, and fancy boats for the boys, those boys and girls do not have any better time than those who can not have these things; they have their good time in another way—that is all. In the pictures on this page, the artist has given his ideas of a good time among youngsters, and the lower picture illustrates what we were just saying. The boys and girls who are taking a drive in the basket wagon, are having a real good time, but not a bit better than the boys who are having their good time in fishing; indeed, the boy who has seated himself on the railing of the bridge, showing the results of his sport, is far from envying those who roll along in the carriage. He no doubt says to himself, "Driving out in that way is all well enough when you can't do anything else, but for a *real* good time, let *me* go a fishing."—Then the other picture shows a good time of another sort. It rains, and where else should the children go but to the garret? Where else are there such hidden treasures, and such dark and mysterious poke-holes, with all the old bonnets of past fashions, and all the long-forgotten toys? But though the roof upon which the rain drops patter so pleasantly, is perfectly tight, and the garret dry, to have a real good time, the youngsters must have an umbrella, and play that they would get wet without it; the horse—no matter if he does get wet, but the doll, she must be kept carefully under the umbrella. So the rain rattles on the roof, and the dear little ones keep under the umbrella as carefully as if there were no roof—and many times more pleasantly. When these children get to be men and women, they may read in books about "the pleasures of the imagination," and then will think—"Ah, the greatest pleasure I ever had in imagination, was under an umbrella in a garret, playing that it rained hard, when the rain was all out-side."—We have said that boys and girls can have a good time if they "only knew how,"—and perhaps you are waiting for us to tell you "how." It is a great and important "secret," but we will tell you that the only real, original, No. 1 way to have a good time, is to try and make the time pleasant for your companions. No matter whether it is boys with boys, girls with girls, or both together, let each one try his or her very best, that each and all of the others shall have a good time, and those who do this will learn the secret of having the very best possible good time themselves.

HAVING A GOOD TIME IN THE GARRET.

Ponto, the Trapper's Dog.

The following dog-story comes from R. J. Hamill, Vermont, who heard it related when traveling in the far west. The dog was with the trapper when he told the story.

"Gentlemen, I have had that dog these six years, and I never saw a dog that knew more. Four years ago I was trapping in Nebraska. One evening when I came home, I found several of the settlers waiting for me. They wanted me to bring my dog to help in the hunt for a child who had lost his way the night before. The friends of the child had been looking for him all night and all day, and had not found him. I started with Ponto in search of him, first finding the child's track, which I showed to Ponto. The dog did not at once understand what I wanted of him, but I got one of the boy's stockings, and let Ponto smell of it, and I then showed him the track; this time he understood what I wanted. He started off on the run, but I called him back, and got some bread and meat, and I also filled my canteen with water, and tied this with the bread and meat to the neck of the dog, and started him off once more. We followed as long as we could hear Ponto bark, and when we had no longer this to guide us, we camped for the night, and a clear and moon-light night it was. We stayed in our camp until day-light, when we began to listen and look around, and try if we could see or hear anything of the dog or child. After waiting, and hearing or seeing nothing, we started off in different directions. It was ten o'clock in the forenoon, before our most careful searching and listening were rewarded. At last, as I gained an elevated ridge, I heard the dog bark, and you may be sure that we started off quickly enough towards the sound. As I came nearer I whistled. Then Ponto came running toward me, and back he would bounce again to where he was barking at first. On coming up, there was the boy lying under a bush, and fast asleep! The poor little fellow was frightened when we awoke him, but he soon got over it, and asked for his mamma, and was told that we would take him to her. Then we asked him how he came to get lost. He said that he started out to find his papa, and that he kept on traveling until after dark, when he got so tired that he lay down and went to sleep. He stayed in that place until morning, and then he got up and tried to get home, but not being able to go any farther, he lay down where we found him. He said that when the dog came, he was at first afraid of him, but he saw the things on him, called the dog to him, and took them off. The dog would not leave the boy until we came, but ran around and around the lost boy and barked. The little fellow was eight miles from home. Had it not been for this good old Ponto, we very likely would not have found the boy alive. Some dogs, gentlemen, know a great deal more than some men, and Ponto is one of them."

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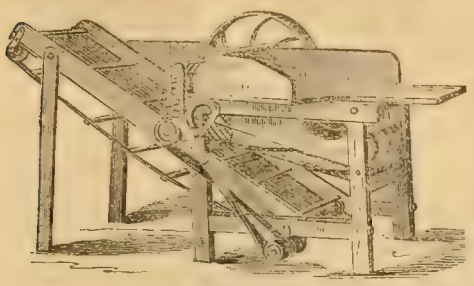

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does its work thoroughly, picking the corn from the stalk and stripping every ear and husking, large or small, completely of husks and silk. Any ordinary two-horse power is sufficient to operate the machine, which is capable of husking 60 bushels per hour. This machine combines simplicity, strength, durability, and practical utility, and no Farmer can afford to do without it.

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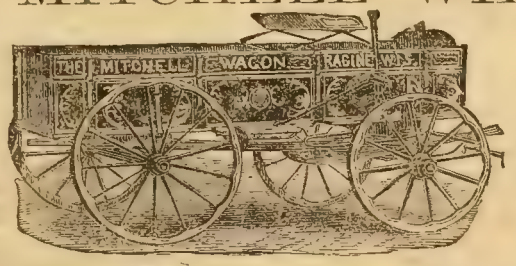

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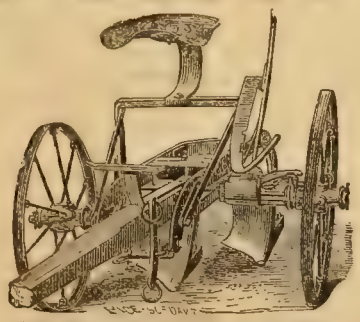

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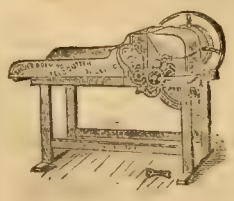

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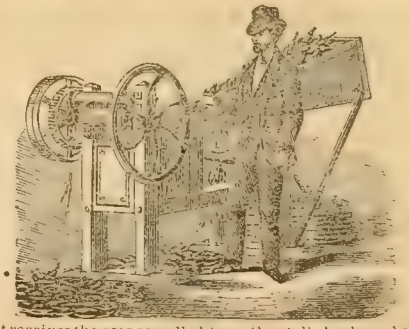

It receives the ears as pulled from the stalk, husks and silks it perfectly clean. This machine husks rapidly, propelled by horse or hand power. Machines supplied from Huntington Machine Works, 135 Halsey St., Newark, N. J.

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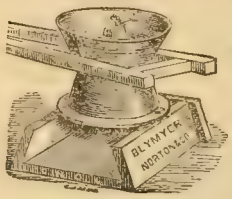

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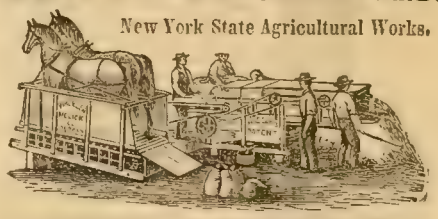

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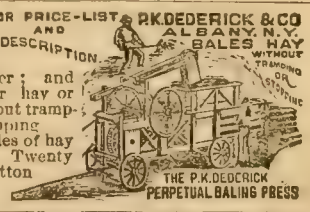

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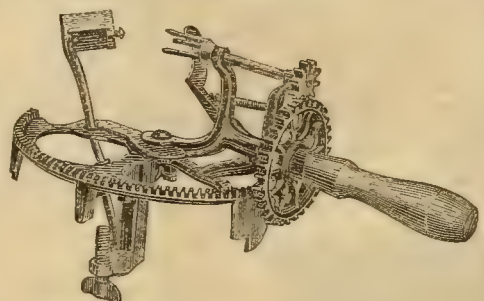

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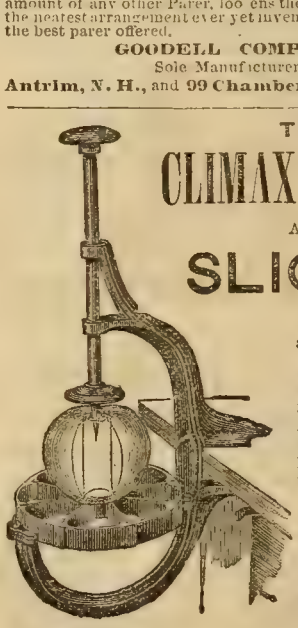

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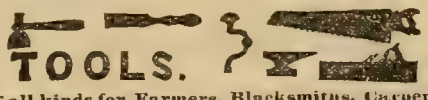

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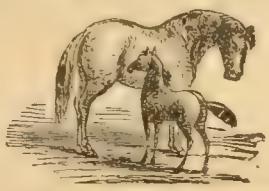

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Vol. One.—Being a Compilation of the

PEDIGREES OF AMERICAN AND IMPORTED BLOOD HORSES,

from the earliest records, with an Appendix of all named animals without extended Pedigrees prior to the year 1840. And a Supplement, containing a history of all Horses and Mares that have trotted in public from the earliest trotting races until the close of 1866. By J. H. WALLACE. Royal octavo of over 1,000 pages elegantly bound in extra cloth, beveled boards, and splendidly illustrated.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 332.

"Soft Raw-hide."—"C. A.," Rose Hill, Ohio. To make a hide pliable, it should first be soaked in water, freed from dirt and flesh, and then placed in a barrel of milk of lime (thick white wash): it is taken out every two days and replaced, so that every portion of the hide may be in contact with the lime. When the hair is loose, it is all scraped off, and the hide is soaked for a few days in a barrel of water and hen manure, by which it is cleaned from lime. It is then trodden by the feet in a tub of water and soft soap, and then scraped on a beam or bench. Lastly, as much fish oil or tanner's oil as possible is worked in the skin. When no more oil is taken up, it is hung up for a few days and may be used.

Megrims in a Horse.—"J. M.," Northwood Center, N. H. The fits described are those of "megrims," a disease of the brain, in which there is much congestion, and sometimes inflammation. It occurs chiefly in summer time, and when affected by it, the horse, if being driven, will suddenly stop and tremble violently, or fall to the ground. It is thus very dangerous, and may cause a disaster at any time. There is no cure but to use a strap collar in place of the common collar, so as to prevent pressure upon the veins of the neck, and to keep a wet sponge upon the horse's head when driving him. To feed rather sparingly is also advisable. A horse subject to this disease, however, is always dangerous, and should only be driven in the winter time.

Angora, or Cashmere Goats.—"D. S. B.," Duplin Co., N. C. We do not know of any true Cashmere Goats in this country. The goats called "Angora, or Cashmere," are Angora, but *not* Cashmere. The Angora goat produces the mohair of commerce, but not the fine wool of which the famous shawls are made. This is the production of the true Cashmere goat, of which we have none in this country, at least so far as we know. The Angora goats are subject to as many troubles as sheep, and are as easily destroyed by dogs; there is, therefore, nothing gained by changing sheep for goats; in addition, the fleece of the latter is difficult or impossible to dispose of with profit, except in large quantities.

The Mole Plow.—"H. D. H.," Will Co., Ill. The mole plow, or any deep subsoil plow, run through the ground after having been plowed, about once in every three feet, will open the subsoil, and permit the escape downwards of the surface water. After a few years' use, the subsoil will become well broken.

Corn Fodder in the South.—"A. L. H.," Athens, Ga. The common method of saving corn-fodder in the south, is a very wasteful one. A large portion of the stalk, even of the large growing varieties, may be used as fodder, if cured and fed properly. The method in use in the northern states, is to cut the stalks near the ground as soon as the grain is glazed, and while the leaves are still green. The stalks are then bound in shocks, and left in the field until the ears are hard, when the corn is husked and the stalks bound in sheaves, and again set up in the field until they are thoroughly cured. Some farmers cut the stalks above the ears, while they are green, and cure them for fodder, leaving the ears to ripen upon the lower parts of the stalk. The cured fodder is cut up into pieces half an inch or less in length, and when fed, is moistened with water and sprinkled with meal and a little salt; treated in this way it is readily eaten by all sorts of stock.

Founder, or Laminitis.—"W. W. S.," Cartersville, Ga. There is no such thing as chest founder. Founder is a disease of the feet, and consists of inflammation of the laminæ or leaves which unite the sensitive inner portion of the foot with the outer insensible horn or hoof. These laminæ dovetail with each other, and consist of about five hundred folds or plaits, which are plentifully supplied with blood vessels, and are highly sensitive. When a horse is affected with chronic founder, the feet will be found very tender on the sole and frog, and when these parts are struck with a light hammer, the horse will flinch. The sole is convex, and the frog is so low as to touch the ground in spite of the thick shoe. After being driven, the hoof will be hot, especially around the coronet. The most conspicuous mark of "founder" is the bringing the heels to the ground first, instead of placing the foot [illegible]ly down.

"Walks and Talks" Correspondence.

UNDERDRAINING.—"W. H.," Wentworth Co., Ontario, writes: "Does sandy loam generally need underdraining, or only that which has a clay subsoil?"—It is very easy to tell whether land needs underdraining. Dig holes three or four feet deep, and leave them open. If water comes in from below and remains there a week or ten days, the land needs draining. Frequently low portions of a farm are kept wet from springs in the high land adjoining. If the upland was drained, the low land might not need it. This is the case, to a great extent, on my own farm, and also on the farm of John Johnston and Mr. Swan.

SUBSOILING OR DEEP PLOWING.—"W. H." also asks: "In plowing deeper is it better to put three horses on to a jointer plow, or to do real subsoiling?"—It will depend upon the land. If the subsoil is a rich loam, bring an extra inch or two to the surface. If it is a raw, cold clay, it would probably be better to break it up with a subsoil plow, and not bring it to the surface. You can plow deep without using a jointer. The only object in using a "jointer" or "Michigan double plow," is to cover up the sod or weeds by turning them into the bottom of the furrow....I plowed seventeen acres of sod land last fall with a three-horse jointer plow. I did not plow it again in the spring. The harrows and cultivators made it in good condition for peas and barley. The sod was buried so deep that the cultivator teeth did not tear it up. When land is to be plowed again in the spring I am not sure that there is any special advantage in using a jointer.

PREPARING LAND FOR ROOT CROPS.—"W. H." proposes to cultivate a wheat stubble immediately after harvest, harrow and roll and sow white turnips. These he will eat off on the land with sheep. The land is intended for roots in the spring. "Now, after feeding off the turnips," he writes, "shall I plow the land deep with three horses, or shall I plow shallow and follow with a subsoil plow?"—It will depend on the land. On my land I should plow deep this fall, and in the spring plow it again twice, not so deep, and either ridge it for the mangles or turnips, putting the manure in the ridges, or else I should spread the manure broadcast and work it thoroughly into the soil and then drill in on the flat. Good deep fall plowing is an essential point in raising roots.

LOSS OF CLOVER.—Mr. H. C. Loose, Md., has a thirty-acre field on which the clover has missed, now for the second time. "I wish," he writes, "to re-seed it with clover without putting in a grain crop. Do you think it would do to sow clover on it this fall, say from the first to the middle of September, harrowing the ground first with sharp heavy harrows and then sow the seed and harrow again afterwards in the opposite direction?"—I would harrow again twice in opposite directions before sowing the seed. Much of the success of the operation will depend on the thoroughness with which the soil is harrowed. Sow as early as possible, say six quarts clover and four quarts timothy, or eight quarts clover alone, or better still, if you want the field for pasture, sow eight quarts red clover and two quarts white clover. Mow the field next summer for hay, or if you pasture it, keep out the stock until the clover has got well established. In your climate I should expect clover sown in the fall to do well.

HIGH FARMING IN ILLINOIS.—"A. D.," Du Quoin, Ill. who has read Walks and Talks, writes: "Nothing excites my attention and sympathy more than the recital of your woes and 'blues,' 'poor prospects for wheat,' 'failure of corn,' 'clover frozen out,' etc. We have been there," he says, "and though we complained but little, we felt and thought a good deal."—He then says he has underdrained at much cost, and manured at the rate of 110 good loads of rich manure per acre, kept the weeds down, and the result is more failures than successes. "My wife says," he remarks, "to read Walks and Talks, one would think all one had to do to get rich, was to haul out manure, of which I can get all I want for the hauling a mile distant, and so I have hauled summer and winter, in snow and rain, in heat and cold, and am not yet rich, and cannot *see* that the manure has ever yet on the average paid me twenty-five cents per load. On land thirty years in cultivation without much rest, rotation and manure, and which had become so reduced as not to grow corn more than from ten to thirteen feet high, I undertook to bring this farm up with manure and good cultivation. Have salted, plastered, ashed, coal dusted, and cindered with no visible effect. Have put on slaughter-house refuse, hair, cracklins and bones, cooked to powder, at the rate of 8,000 lbs. per acre, besides the 110 loads of fine manure, and could see no effect of the refuse. Am this year trying bone dust on everything in alternate strips. Can see any improvement only on lettuce and grass. It killed out my onions. But with butter at 37½ cents per lb the year through, skimmed milk cheese 18c. @ 20c., all we can make; corn, 50c. @ 75c. per bushel; potatoes, $1.00 per bushel; cabbage, 10c. @ 15c. per head; cucumbers, 25c. @ 40c. per dozen; onions, $2 per bushel; beets, 2½c. each, all we can raise; the prospect *looks* encouraging, and I have 'faith in farming,' though I am not rich, and though I have not made it a success."—I suppose A. D. means what he says, but I have never recommended this kind of farming. Over a hundred loads of fine manure per acre, and four tons of animal matter, is too much of a good thing, and we should not call land which will produce corn ten to thirteen feet high, very much run down. It is not often we are called upon to give such advice, but I think A. D. wants a larger farm. He should draw all the manure he can get for the hauling, but he should spread it over more land.

SHEEP IN MONTANA.—"R. P.," writes me an interesting letter from western Montana. They have an abundance of bunch grass, and common sheep brought from Oregon, some years ago, are remarkably healthy and hardy. He wants to raise sheep principally for their wool, and asks what kind of a ram he should get to cross their common ewes with. He wants to know about Cotswolds. My own experience with Cotswold grades, has been in raising them for mutton as well as wool. For wool alone, I think I should prefer to get good improved American Merino rams, and cross them with common ewes.

SOWING RYE AMONG CORN.—J. B. Van Eaton, Greene Co., Ohio, asks if it would be a good plan to sow rye among corn in the fall, to be fed off afterwards with sheep?—I have never tried it. But have been thinking of doing so. The chief objection is that our seasons are so short, and the rye grows so rapidly, that we should not be able to feed it for more than two or three weeks. Still even this would often be a great help in the spring.

WOOL FROM GRADE COTSWOLD SHEEP.—"I. B. V.," asks, "How many pounds of wool per head can a flock of grade Cotswold sheep be made to average? I keep from 35 to 40 head of sheep, and I can not get more than 5 lbs. per sheep, which does not satisfy me."—A good, well fed flock of grades, with from one to three crosses of pure Cotswold blood, starting with common Merino ewes, should average 7 lbs. of washed wool. But a good deal will depend on the feed, and also on the kind of ram used. The mistake usually made, is in selecting a *large* ram. Generally the best wooled Cotswolds have not the largest carcass. The English have been breeding for mutton. We should pay more attention to purity of blood, and select those of good form, good constitution, and good wool.

SHOULD HE KEEP MORE SHEEP?—The same correspondent says, I have a farm of 140 acres, 110 acres cleared. I raise 35 acres of corn, 40 acres of wheat. Cut 16 acres of clover, pasture 16 acres of clover, keep five horses, 50 Poland China pigs, 4 cows, and 40 grade Cotswold sheep, and try to feed out everything on the farm. raise no oats, but summer-fallow for wheat. Do you think I ought to carry a larger flock of sheep?"—I think so; I do not quite understand the rotation adopted, but suppose the 16 acres which are mowed for hay, and the 16 acres pastured, are plowed up and planted with corn. Then, as soon as the corn is off, the corn stubble is sown to wheat. This is seeded down and kept in grass only one year, and is then plowed again for corn. Here our farmers would think this was too much corn and too little clover. I am myself so much of a pig man, that I should probably keep as many hogs as I. B. V. does, and I should have to raise as much corn. The change I should make, would be less wheat and more clover. I should keep my land two years in clover and grass, pasture it the second year, top-dress it with manure in the fall, and plow in the spring for corn.

SHEEP IN EASTERN TENNESSEE.—Mr. S. F. Gettys, of Tennessee, writes that he has "a grade Cotswold ram lamb, dropped February 15, weight at birth, 12 lbs. At 40 days old, 45 lbs.; 60 days old, 62½ lbs.; 78 days old, 80lbs.; 96 days old, 97lbs. This lamb's mother is a common mountain ewe, weighing 85 or 90 lbs."—This is a very remarkable gain. "The sheep," he adds, "had a bite of grass all winter, good rye pasture, and a small allowance of grain after lambing—and this, by the way, is a great advantage of our climate. With proper management, we can have pasture for the ewes the year round. Orchard grass and winter rye I now think, will prove best."

WHITE WHEAT.—"J. W.," Ontario, wants to get some more Soules' Wheat. It was raised largely in this section fifteen or twenty years ago. It was one of the best varieties of white wheat we ever had. But when the midge came, it was so much injured that our farmers abandoned it, and went back to the red Mediterranean, which ripened a week earlier, and was not so liable to injury from the midge. I do not now know a farmer who raises Soules wheat. We have been raising the Diehl, but our farmers are now giving this up, and *Clawson* is to-day the popular white wheat of western New York. I presume it will be advertised in the *Agriculturist*.

State, County, and other Fairs for 1875.

State, Provincial, etc.

Alabama	Selma	Oct. 26–Nov. 1
American Pomological	Chicago	Sept. 8–10
California	Sacramento	Sept. 15–25
Cincinnati Industrial	Cincinnati	Sept. 8–Oct. 9
Colorado	Denver	Sept. 21–25
Connecticut	Hartford	Oct. 5– 8
Georgia	Macon	Oct. 18–23
Germantown Hort.	Germantown	Sept. 7– 9
Illinois	Ottawa	Sept. 13–18
Indiana	Indianapolis	Sept. 9–Oct. 2
Iowa	Keokuk	Sept. 27–Oct. 1
Kansas City Exhibition	Kansas City, Mo.	Sept. 13–18
Louisville Industrial	Louisville, Ky.	Sept. 1–Oct. 16
Maine	Portland	Sept. 21–24
Maine Pomological	Wiscasset	Sept. 21–24
Manufact. & Mech. Ex.	St. John, N. B.	Sept. 7
Maryland	Baltimore	Sept. 14–17
Massachusetts Hort'l	Boston	Sept. 21–24
Mechanics	San Francisco	Aug. 17–Sept. 17
Michigan	East Saginaw	Sept. 13–17
Minnesota	St. Paul	Sept. 14–17
Montana	Helena	Sept. 27–Oct. 2
National Exposition	Rome, Ga.	Oct. 4– 9
Nebraska	Omaha	Sept. 21–24
Nevada	——	Oct. 4– 9
New England	Manchester, N. H.	Sept. 7–10
New Jersey	Waverley	Sept. 20–24
New York	Elmira	Sept. 27–Oct. 1
Ohio	Columbus	Oct. 6–10
Oregon	Salem	Oct. 11–16
Pennsylvania	Lancaster	Sept. 27–29
Rhode Island	Providence	Oct. 5– 7
St. Louis Association	St. Louis, Mo.	Oct. 4– 9
Virginia	Richmond	Oct. 26–30
Washington Ter.	——	Oct. 18–23
West Virginia	Clarksburg	Sept. 7– 9
Wisconsin	Milwaukee	Sept. 6–10

County and Town Fairs.

MAINE.

Androscoggin	Lewiston	Oct. 5– 7
Aroostook	Houlton	Sept. 23–24
Cumberland	West Cumberland	Oct. 5– 7
Franklin, North	Phillips	Sept. 29–30
Franklin	Farmington	Oct. 5– 6
Hancock West	Bucksport	Oct. 6– 8
Kennebec	Readfield Corner	Oct. 5– 7
Lincoln	Waldoboro	Oct. 12–14
Oxford	South Paris	Oct. 5– 8
Oxford West	Fryeburg	Oct. 12–14
Piscataquis West	Monson	Sept. 29–30
Sagadahoc	Topsham	Oct. 12–14
Somerset Central	Skowhegan	Sept. 29–30
Waldo	Belfast	Oct. 11–13
Washington	Pembroke	Sept. 29–30

NEW HAMPSHIRE.

Contocook	Hillsboro' Bridge	Sept. 21–22
Conn. River Valley	Claremont	Sept. 14–16
Coos and Essex	Lancaster	Sept. 28–29
Grafton	Plymouth	Sept. 14–16
Mascoma Valley	——	Sept. 14–16
Oak Park Association	Greenfield	Sept. 15–16

MASSACHUSETTS.

Barnstable	Barnstable	Sept. 21–22
Berkshire	Pittsfield	Oct. 5– 7
Bristol	Taunton	Sept. 28–30
Bristol Center	Myrick's	Sept. 15–17
Deerfield Valley	Charlemont	Sept. 23–24
Essex	Danvers	Sept. 28–29
Franklin	Greenfield	Sept. 30–Oct. 1
Grafton	Grafton	Sept. 16
Hampden	Springfield	Oct. 5– 6
Hampden, East	Palmer	Sept. 23–24
Hampshire	Amherst	Sept. 28–29
Hampshire, Franklin, and Hampden	Northampton	Oct. 6– 8
Highland	Middlefield	Sept. 16–17
Hingham	Hingham	Sept. 29–30
Hoosac Valley	North Adams	Sept. 21–23
Housatonic	Great Barrington	Sept. 29–Oct. 1
Lunenburg	Lunenburg	Sept. 22
Marshfield	Marshfield	Oct. 6– 8
Martha's Vineyard	West Tisbury	Oct. 5– 6
Middlesex	Concord	Sept. 28–30
Middlesex, North	Lowell	Sept. 29–30
Middlesex, South	Framingham	Sept. 21–22
Nantucket	Nantucket	Sept. 29–30
Norfolk	Readville	Sept. 30–Oct. 1
Plymouth	Bridgewater	Sept. 22–24
Union	Blandford	Sept. 22–23
Worcester	Worcester	Sept. 23–24
Worcester, North	Fitchburg	Sept. 28
Worcester, Northwest	Athol	Oct. 5– 6
Worcester, South	Sturbridge	Sept. 9–10
Worcester, Southeast	Milford	Sept. 29–Oct. 1
Worcester, West	Barre	Sept. 30–Oct. 1

RHODE ISLAND.

Washington	Kingston	Sept. 15–16
Woonsocket	Woonsocket	Sept. 14–16

CONNECTICUT.

Danbury	Danbury	Oct. 5– 7
Guilford	Guilford	Oct. 6
Middlesex	Middletown	Sept. 28–Oct. 1
New Haven	Meriden	Sept. 22–24
New London	Norwich	Sept. 14–16
Ridgefield	Ridgefield	Sept. 7–10
Union	Falls Village	Sept. 8– 9
Watertown	Watertown	Sept. 29–30
Windham	Brooklyn	Sept. 21–23

VERMONT.

Caledonia	St. Johnsburg	Sept. 21–23
Chittenden	Essex Junction	Sept. 7– 9
Dog River	Northfield	Sept. 28–29
Franklin	Sheldon	Sept. — —
Orange	Bradford	Oct. 5– 8
Washington	Montpelier	Sept. 30–Oct. 1
White River Valley	Bethel	Sept. 21–23

NEW YORK

Antwerp Union	Antwerp	Sept. 1- 3
Brookfield	Madison Co.	Sept. 21-22
Broome	Whitney's Point	Sept. 14-16
Brush's Mills	Franklin Co.	Sept. 14-16
Camden Industrial	Camden	Sept. 16-18
Cattaraugus	Little Valley	Sept. 15-17
Cayuga	Auburn	Sept. 14-16
Central New York	Utica	Sept. 27-Oct. 2
Chautauqua	Jamestown	Sept. 21-24
Chenango	Norwich	Sept. 8-10
Clay Farmers' Club	Centerville	Sept. 16-18
Columbia	Chatham Village	Sept. 15-17
Cortland	Cortland	Sept. 15-16
Delaware	Delhi	Sept. 14-16
Dutchess	Washington Hollow	Sept. 14-16
Eastern New York	Albany	Oct. 5- 8
Edmeston & Burlington	Edmeston	Sept. 14-16
Ellisburgh, Adams & Henderson	Adams	Sept. 2- 3
Erie	Hamburg	Sept. 14-16
Essex	Westport	Sept. 14-16
Franklin	Malone	Sept. 28-30
Galen	Clyde	Sept. 23-25
Genesee	Batavia	Sept. 15-16
Gouverneur	St. Lawrence Co.	Sept. 7- 9
Gowanda	Cattaraugus Co.	Sept. 23-25
Hamilton	East Hamilton, Madi Co.	Oct. 5- 7
Herkimer	Herkimer	Sept. 14-16
Hudson River Agric'l	Poughkeepsie	Sept. 21-24
Jefferson	Watertown	Sept. 8-10
Lenox	Oneida, Mad. Co.	Sept. 28-Oct. 1
Lewis	Lowville	Sept. 15-17
Montgomery	Fonda	Sept. 21-23
Moravia	Cayuga Co.	Sept. 16-18
Newburgh Bay Hort'l	Newburgh	Sept. 29-Oct. 1
Niagara	Lockport	Sept. 16-18
Oneida	Rome	Sept. 20-24
Onconta Union	Oneonta	Sept. 21-23
Onondaga Northwest'n	Baldwinsville	Sept. 15-17
Ontario	Canandaigua	Sept. 15-17
Orleans	Albion	Sept. 24-25
Oswego	Mexico	Sept. 28-30
Oswego Falls	Oswego Co.	Sept. 22-24
Otego	Otsego Co.	Sept. 23-25
Otsego	Cooperstown	Sept. 20-22
Phœnix Union	West Phœnix	Sept. 20-22
Queens	Mineola	Sept. 28-30
Racket & St. Regis Valley	Potsdam	Sept. 21-23
Rhinebeck	Dutchess Co	Sept. 8-10
St. Lawrence	Canton	Sept. 14-16
Sandy Creek, Richl'd, Orwell, Sandy Creek		Sept. 15-17
Sangerfield & Marshall	Waterville	Oct. 5- 6
Saratoga	Saratoga Springs	Aug. 31-Sept. 3
Schenectady	Schenectady	Sept. 21-24
Schenevus Valley	Schenevus	Sept. 16-18
Schoharie	Schoharie	Oct. 5- 7
Schuyler	Watkins	Oct. 6- 8
Seneca	Waterloo	Oct. 5- 7
Sherburne	Chenango Co.	Sept. 21-23
Skaneateles	Skaneateles	Sept. 22-23
Steuben	Bath	Oct. 6- 8
Suffolk	Riverhead	Oct. 5- 7
Susquehanna Valley	Unadilla	Sept. 7- 9
Tompkins	Ithaca	Sept. 14-16
Trenton	Trenton, Oneida Co.	Sept. 14-16
Ulster	Kingston	Sept. 28-30
Ulysses, Covert & Hector	Trumansburgh	Sept. 22-24
Valley Point	Cuba	Sept. 21-24
Vernon	Vernon	Sept. 15-16
Waddington	St. Lawrence Co.	Sept. 7- 9
Warren	Glen's Falls	Sept. 21-24
Warrensburgh	Warren Co.	Sept. 14-17
Washington	Sandy Hill	Sept. 8-11
Wayne	Palmyra	Sept. 30-Oct. 2
Westchester	White Plains	Sept. 7-11
Western New York	Rochester	Sept. 20-25
Westmoreland	Oneida Co	Sept. 15-17
Winfield Union	West Winfield	Sept. 8-10
Wyoming	Warsaw	Sept. 21-22
Yates	Penn Yan	Oct. 5- 7

NEW JERSEY.

Atlantic	Egg Harbor City	Sept. 27-28
Burlington	Mt. Holly	Oct. 5- 6
Cape May	Cape May C. H	Sept. 22-23
Cumberland	Bridgeton	Sept. 22
Hunterdon	Flemington	Sept. 28-30
Monmouth	Freehold	Sept. 14-16
Somerset	Somerville	Oct. 5- 8
Warren	Belvidere	Oct. 5
West Jersey	Woodstown	Sept. 15-16

PENNSYLVANIA.

Bucks	Doylestown	Oct. 5- 8
Chartier's Valley	Cannonsburg	Sept. 28-30
Chester	Ambler Park	Sept. 21-24
Chester	Oxford	Sept. 22-24
Chester	Westchester	Sept. 8-11
Crawford	Titusville	Oct. 4- 7
East Penn	Norristown	Sept. 14-17
Fayette	Brownsville	Sept. 30-Oct. 1
Greene	Carmichael's	Sept. 16-18
Greene	Waynesburgh	Sept. 30-Oct. 1
Lawrence	Harlansburg	Sept. 21-23
Lehigh	Allentown	Sept. 29-Oct. 2
Northumberland	Sunbury	Sept. 28-Oct. 1
Schuylkill	Orwigsburg	Sept. 28-30
Washington	Washington	Sept. 30-Oct. 1
Westmoreland	Greensburgh	Sept. 29-Oct. 2

OHIO.

Allen	Lima	Sept. 22-25
Ashtabula	Jefferson	Sept. 6- 8
Athens	Athens	Sept. 16-17
Belmont	St. Clairsville	Sept. 14-17
Brown	Georgetown	Sept. 7-10
Butler	Hamilton	Oct. 4- 7
Carroll	Carrolton	Oct. 13-15
Central	Mechanicsburg	Aug. 31-Sept. 3
Central	Orrville	Oct. 13-15
Champaign	Urbana	Oct. 5- 8
Clarke	Springfield	Sept. 21-24
Clermont	Batavia	Sept. 7-10
Clinton	Wilmington	Sept. 14-17
Columbiana	New Lisbon	Sept. 21-24
Coshocton	Coshocton	Sept. 14-17
Crawford	Bucyrus	Sept. 28-Oct. 1
Cuyahoga	Cleveland	Aug. 31-Sept. 3
Darke	Greenville	Sept. 21-24
Delaware	Delaware	Sept. 29-Oct. 1
Erie	Sandusky City	Sept. 21-24
Fairfield	Lancaster	Oct. 13-16
Fulton	Ottekee	Sept. 15-17
Gallia	Gallipolis	Oct. 6- 8
Geauga	Burton	Sept. 21-23
Greene	Xenia	Oct. 6- 8
Hancock	Findlay	Sept. 29-Oct. 2
Hardin	Kenton	Sept. 28-Oct. 1
Harrison	Cadiz	Sept. 28-Oct. 1
Hocking	Logan	Oct. 7- 9
Huron	Norwalk	Sept. 28-Oct. 1
Jefferson	Smithfield	Sept. 21-23
Knox	Mt. Vernon	Oct. 5- 7
Lake	Painesville	Sept. 29-Oct. 1
Lawrence	Ironton	Sept. 15-17
Licking	Newark	Oct. 5- 8
Logan	Bellefontaine	Sept. 28-Oct. 1
Lorain	Elyria	Sept. 28-30
Lucas	Toledo	Sept. 28-Oct. 1
Mahoning	Canfield	Oct. 5- 7
Marion	Marion	Oct. 5- 8
Medina	Medina	Sept. 29-Oct. 1
Morgan	McConnellsville	Sept. 21-23
Morrow	Mt. Gilead	Sept. 22-24
Muskingum	Zanesville	Sept. 28-Oct. 1
Northern	Cleveland	Sept. 13-17
Ottawa	Port Clinton	Oct. 5- 7
Paulding	Paulding	Sept. 28-30
Perry	New Lexington	Sept. 22-24
Pickaway	Circleville	Sept. 21-24
Portage	Ravenna	Sept. 20-23
Preble	Eaton	Sept. 28-Oct. 1
Putnam	Ottawa	Sept. 22-24
Ross	Chillicothe	Sept. 14-17
Sandusky	Fremont	Sept. 21-24
Seneca	Tiffin	Sept. 21-24
Shelby	Sidney	Sept. 21-24
Southern	Dayton	Sept. 28-Oct. 1
Stark	Canton	Sept. 28-Oct. 1
Trumbull	Warren	Sept. 7-10
Tuscarawas	Canal Dover	Sept. 28-Oct. 1
Union	Marysville	Oct. 5- 8
Van Wert	Van Wert	Sept. 23-25
Warren	Lebanon	Sept. 21-24
Washington	Marietta	Sept. 8-10
Wayne	Wooster	Sept. 22-24
Williams	Bryan	Sept. 21-24
Wood	Tontogany	Sept. 28-Oct. 1
Wyandotte	Upper Sandusky	Oct. 11-14

INDIANA.

Bartholomew	Columbus	Sept. 14-20
Boone	Lebanon	Oct. 4- 9
Cass	Logansport	Sept. 6-11
Clark	Charleston	Sept. 8-10
Carroll	Delphi	Sept. 13-18
Cambridge City	Cambridge City	Sept. 14-17
Dearborn	Aurora	Sept. 7-11
Decatur	Greensburg	Sept. 21-24
Daviess	Washington	Sept. 6-11
Elkhart	Goshen	Sept. 22-25
Edinburg Union	Edinburg	Sept. 21-25
Franklin	Brookville	Aug. 31-Sept. 4
Fayette	Connersville	Sept. 7-10
Fountain, Warren and Vermillion, Covington		Sept. 21-24
Fall Creek Society	Pendleton	Sept. 7-10
Grant	Marion	Sept. 21-24
Gosport District	Gosport	Aug. 31-Sept. 4
Gibson	Princeton	Sept. 13-18
Greene	Linton	Sept. 27-Oct. 2
Harrison	Corydon	Sept. 14-18
Hendricks	Danville	Sept. 7-12
Howard	Kokomo	Sept. 21-24
Huntington	Huntington	Sept. 21-24
Jasper	Rensselaer	Sept. 16-19
Jay	Portland	Sept. 28-Oct. 1
Jefferson	North Madison	Sept. 20-24
Jackson	Seymour	Sept. 7-10
Johnson	Franklin	Sept. 14-18
Knox	Vincennes	Oct. 11-16
La Grange	La Grange	Sept. 28-Oct. 1
Lake	Crown Point	Sept. 29-Oct. 1
Lawrence	Bedford	Sept. 13-19
Loogootee Society	Loogootee	Sept. 27-Oct. 2
Marion	Valley Mills	Sept. 9-11
Monroe	Bloomington	Sept. 21-24
Morgan	Martinsville	Sept. 14-18
Madison	Anderson	Aug. 31-Sept. 3
Northeastern Indiana	Waterloo	Oct. 5- 8
Northern Indiana	Ft. Wayne	Sept. 13-18
Noble	Ligonier	Oct. 5- 8
Prairie Farmer	Francesville	Sept. 28-Oct. 1
Parke	Bloomingdale	Sept. 7-10
Posey	New Harmony	Sept. 14-17
Pike	Petersburg	Aug. 31-Sept. 4
Peru Driving Park Ass.	Peru	Sept. 21-24
Rush	Rushville	Sept. 14-17
Randolph	Winchester	Sept. 14-17
Ripley	Osgood	Aug. 31-Sept. 3
Richmond Industrial	Richmond	Oct. 4- 9
Southeastern Indiana	Aurora	Sept. 15-18
Shelby	Shelbyville	Sept. 7-11
Spencer	Rockport	Sept. 28-Oct. 2
Tippecanoe	LaFayette	Aug. 30-Sept. 4
Tipton	Tipton	Sept. 14-17
Thorntown Union	Thorntown	Sept. 20-24
Union Agric'l Soc.	Knightstown	Aug. 31-Sept. 3
Union Agric'l Soc.	Russellville	Aug. 30-Sept. 3
Union Agric'l Soc.	Union City	Sept. 14-18
Vigo	Terre Haute	Sept. 14-18
Vermillion	Newport	Sept. 14-18
Wells	Bluffton	Oct. 5- 8
Wabash	Wabash	Sept. 14-17
Wayne	Centreville	Sept. 14-17
Whitley	Columbia City	Sept. 21-24
Worthington Fair	Worthington	Oct. 4-10
Warrick	Booneville	Oct. 12-16

ILLINOIS.

Adams	Payson	Sept. 28-Oct. 1
Boone	Belvidere	Sept. 7-10
Brown	Mt. Sterling	Sept. 7- 9
Bureau	Princeton	Sept. 7-10
Carroll	Mt. Carroll	Sept. 7-10
Cass	Virginia	Aug. 31-Sept. 3
Champaign	Champaign	Sept. 7-10
Christian	Taylorsville	Sept. 27-Oct. 1
Clay	Louisville	Oct. 12-15
Clay	Flora	Sept. 28-Oct. 1
Coles	Charleston	Sept. 7-10
Crawford	Robinson	Sept. 28-Oct. 1
Cumberland	Majority Point	Sept. 15-18
De Kalb	Sycamore	Sept. 28-Oct. 1
De Kalb	De Kalb	Sept. 8-11
Douglas	Tuscola	Sept. 21-24
Du Page	Wheaton	Sept. 6- 8
Edgar	Paris	Sept. 14-17
Edwards	Albion	Oct. 5- 8
Effingham	Effingham	Oct. 5- 8
Fayette	Vandalia	Sept. 29-Oct. 1
Ford	Paxton	Sept. 21-24
Ford	Gibson City	Sept. 31-Oct. 3
Fulton	Avon	Sept. 28-Oct. 1
Gallatin	Shawneetown	Sept. 28-Oct. 1
Greene	Carrollton	Sept. 28-Oct. 1
Grundy	Morris	Sept. 28-30
Hardin	Elizabethtown	Oct. 13-16
Henderson	Biggsville	Sept. 28-Oct. 1
Iroquois	Onarga	Oct. 5- 8
Iroquois	Watseka	Sept. 7-10
Jackson	Murphysboro	Sept. 21-24
Jasper	Newton	Sept. 29-Oct. 2
Jefferson	Mt. Vernon	Sept. 21-24
Jersey	Jerseyville	Oct. 12-15
Jo Daviess	Galena	Sept. 28-Oct. 1
Jo Daviess	Warren	Oct. 5- 8
Kane	Aurora	Aug. 30-Sept. 3
Kane	Geneva	Sept. 29-Oct. 2
Kankakee	Kankakee	Sept. 28-Oct. 1
Kendall	Bristol	Sept. 7-10
Knox	Galesburg	Oct. 5- 8
Lake	Waukegan	Sept. 27-Oct. 2
Lawrence	Lawrenceville	Oct. 5- 8
Livingston	Pontiac	Sept. 28-Oct. 1
Logan	Atlanta	Aug. 31-Sept. 4
Macon	Decatur	Sept. 7-10
Macoupin	Carlinville	Sept. 28-Oct. 1
Madison	Edwardsville	Oct. 28-31
Marion	Centralia	Sept. 27-Oct. 1
Marion	Salem	Sept. 21-24
Marshall	Wenona	Sept. 28-Oct. 1
Mason	Havana	Sept. 28-Oct. 1
McDonough	Macomb	Sept. 7-11
McHenry	Woodstock	Sept. 21-24
McLean	Towanda	Sept. 7-10
Mercer	Aledo	Sept. 28-Oct. 1
Montgomery	Hillsboro	Sept. 14-17
Montgomery	Litchfield	Sept. 28-Oct. 1
Morgan	Jacksonville	Sept. 6- 9
Moultrie	Sullivan	Sept. 14-17
Peoria	Peoria	Oct. 5- 8
Perry	DuQuoin	Sept. 20-24
Piatt	Monticello	Aug. 31-Sept. 3
Pike	Pittsfield	Sept. 28-Oct. 1
Pope	Golconda	Oct. 6- 9
Putnam	Hennepin	Sept. 21-23
Randolph	Sparta	Sept. 29-Oct. 1
Rock Island	Rock Island	Aug. 31-Sept. 3
Sangamon	Springfield	Sept. 20-24
Schuyler	Rushville	Sept. 28-30
Shelby	Shelbyville	Sept. 21-24
Stark	Toulon	Sept. 21-24
St. Clair	Belleville	Sept. 7-10
Stephenson	Freeport	Sept. 6-10
Union	Jonesboro	Sept. 14-17
Vermillion	Danville	Sept. 21-24
Vermillion	Hoopeston	Sept. 14-17
Wabash	Mt. Carmel	Sept. 27-Oct. 1
Warren	Monmouth	Sept. 21-24
Wayne	Fairfield	Sept. 21-24
Whiteside	Sterling	Sept. 7-10
Will	Joliet	Sept. 6-10
Williamson	Marion	Oct. 12-15
Winnebago	Rockford	Sept. 14-17

DELAWARE.

New Castle	Middletown	Oct. 6- 8

MICHIGAN.

Lenawee	Adrian	Sept. 29-Oct. 1

IOWA.

Adair	Greenfield	Sept. 8-10
Cedar	Tipton	Sept. 14
Clarke	Osceola	Sept. 22-24
Grundy	Grundy Center	Sept. 15-17
Jackson	Maquoketa	Sept. 13-16
Jasper	Newton	Sept. 14-16
Mahaska	Oskaloosa	Sept. 14-17
Northwestern	Dubuque	Sept. 6-10
Page	Clarinda	Sept. 28-Oct. 2
Sac	Sac City	Sept. 15-17
Scott	Davenport	Sept. 6
Van Buren	Keosauqua	Sept. 14-17
Wayne	Corydon	Oct. 4- 6

KANSAS.

Shawnee	Topeka	Sept. 22-24

NEBRASKA.

Cass	Plattsmouth	Sept. 14-16
Cuming	West Point	Sept. 8-11
Gage	Beatrice	Sept. 16-17
Johnson	Tecumseh	Sept. 28-30

TENNESSEE.

Washington	Jonesboro	Sept. 23-25

CALIFORNIA.

Napa & Salano	——	Sept. 28-Oct. 2
San Joaquin Valley	Stockton	Sept. 6-11
Santa Clara	San Jose	Oct. 4-10
Santa Cruz	Santa Cruz	Oct. 7- 9
Sonoma & Marion	——	Oct. 4- 9

POULTRY SHOWS.

Nat. Poultry Assoc.	Chicago, Ill.	Jan. 20-28, 1876

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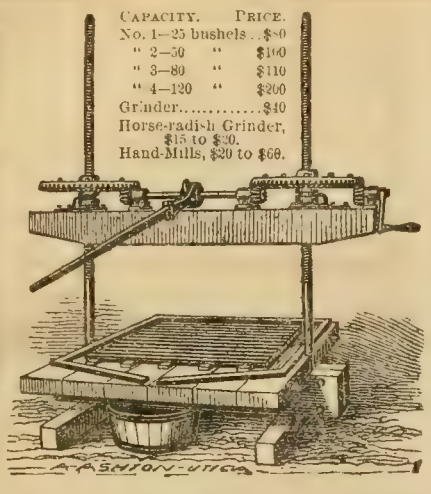

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" 4—120 "	$200

Grinder.....$40
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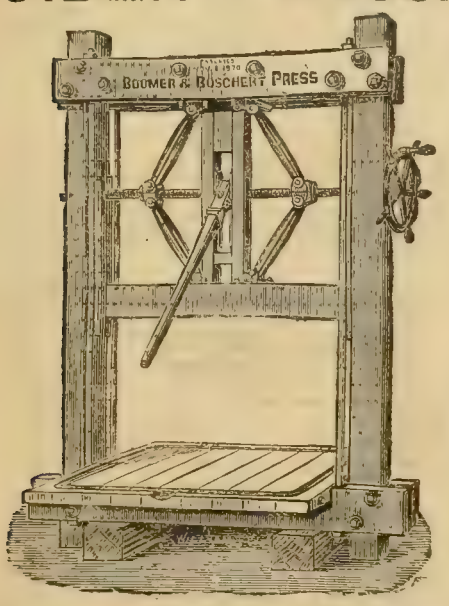

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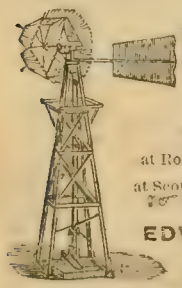

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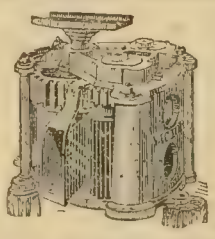

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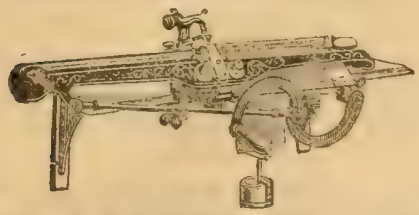

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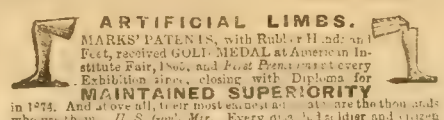

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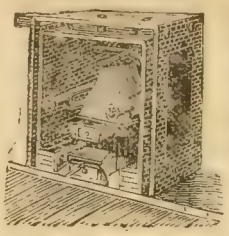

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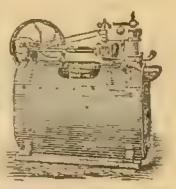

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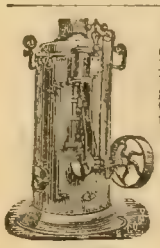

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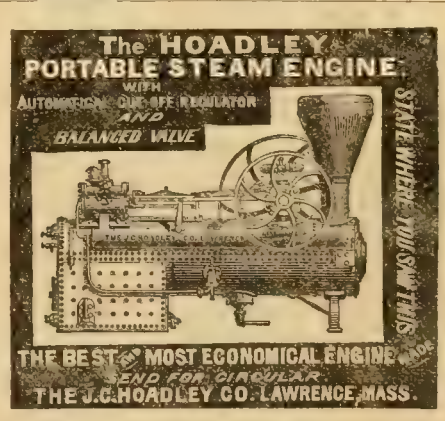

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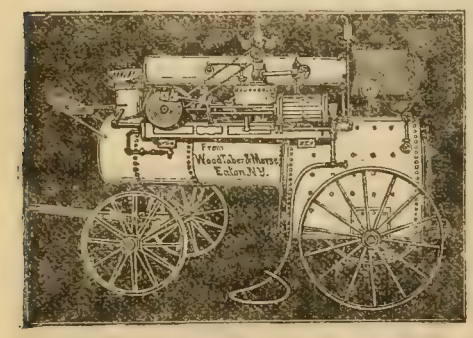

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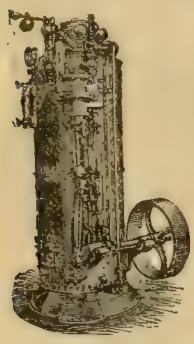

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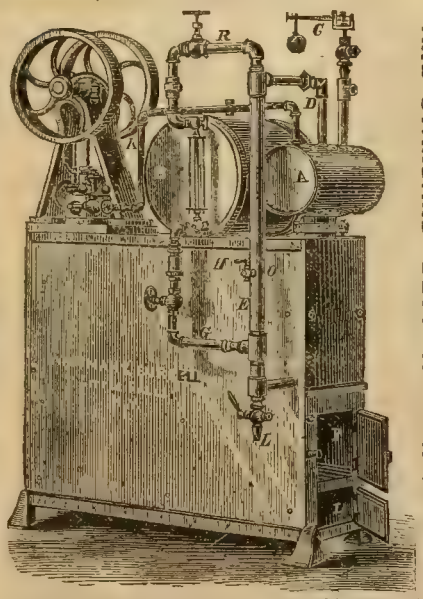

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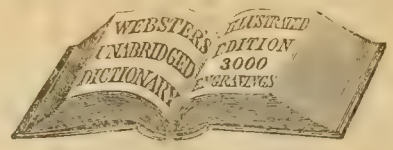

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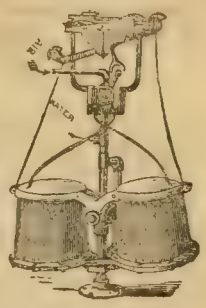

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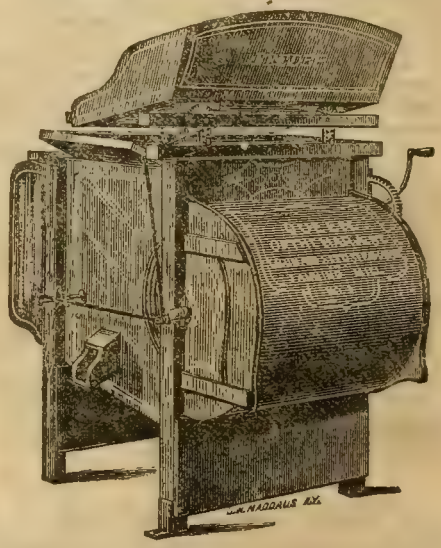

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VOLUME XXXIV.—No. 10. NEW YORK, OCTOBER, 1875. NEW SERIES—No. 345.

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Repairing Shingle Roofs.—"C. E. F.," Wilmington, N. C. A slightly decayed shingle roof may be temporarily preserved from further decay, by a good coat of thick lime-wash. A second coat of still thicker lime-wash, in which fine sand is kept stirred, will act as a further preservative, but the latter application should be renewed every summer. Painting does not help to preserve a roof, unless done on both sides of the shingles; if done on but one side, the moisture which penetrates beneath them, is kept there, and prevented from escaping by the coat of paint on the outside, and the shingles rot very rapidly. Lime is a good preservative for shingles, but crude petroleum is the best. The shingles, first thoroughly dried, may be dipped into it, or it may be put on after they are laid.

Calendar for October.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	F	5 57	5 42	6 34	5 56	5 43	6 38	5 56	5 43	6 41
2	S	5 58	5 40	6 58	5 57	5 41	7 3	5 57	5 41	7 8
3	S	5 59	5 39	7 27	5 58	5 40	7 33	5 58	5 40	7 39
4	M	6 1	5 37	8 0	6 0	5 38	8 6	5 59	5 38	8 14
5	T	6 2	5 36	8 53	6 1	5 37	9 0	6 0	5 37	9 8
6	W	6 3	5 34	9 45	6 2	5 35	9 52	6 1	5 35	10
7	T	6 4	5 32	10 35	6 3	5 33	10 42	6 2	5 34	10 49
8	F	6 5	5 31	morn	6 4	5 32	morn	6 3	5 32	morn
9	S	6 6	5 29	0 6	6 5	5 30	0 11	6 4	5 31	0 17
10	S	6 8	5 27	0 53	6 6	5 28	0 57	6 5	5 29	1 2
11	M	6 9	5 26	2 3	6 7	5 27	2 6	6 6	5 28	2 9
12	T	6 10	5 24	3 15	6 8	5 25	3 17	6 7	5 26	3 19
13	W	6 11	5 22	4 26	6 9	5 24	4 26	6 8	5 25	4 26
14	T	6 12	5 21	rises	6 10	5 22	rises	6 9	5 23	rises
15	F	6 13	5 19	5 38	6 11	5 21	5 41	6 10	5 22	5 45
16	S	6 14	5 17	6 9	6 12	5 19	6 14	6 11	5 20	6 19
17	S	6 15	5 15	6 50	6 13	5 17	6 57	6 12	5 19	7 3
18	M	6 17	5 14	7 41	6 15	5 16	7 48	6 13	5 18	7 56
19	T	6 18	5 12	8 41	6 16	5 14	8 51	6 14	5 16	8 59
20	W	6 19	5 11	9 51	6 17	5 13	10 1	6 15	5 15	10 8
21	T	6 20	5 9	11 10	6 18	5 12	11 15	6 16	5 14	11 21
22	F	6 21	5 8	morn	6 19	5 11	morn	6 17	5 13	morn
23	S	6 22	5 6	0 7	6 20	5 9	0 11	6 18	5 11	0 16
24	S	6 23	5 5	1 30	6 21	5 8	1 35	6 19	5 10	1 36
25	M	6 25	5 3	2 36	6 22	5 6	2 38	6 20	5 9	2 39
26	T	6 26	5 2	3 41	6 23	5 5	3 41	6 21	5 8	3 42
27	W	6 27	5 0	4 45	6 24	5 3	4 44	6 22	5 6	4 43
28	T	6 28	4 59	5 49	6 25	5 2	5 46	6 23	5 5	5 41
29	F	6 29	4 57	sets	6 26	5 0	sets	6 24	5 3	sets.
30	S	6 30	4 55	5 38	6 27	4 59	5 34	6 25	5 2	5 39
31	S	6 32	4 54	5 57	6 29	4 58	6 3	6 26	5 1	6 10

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart	7	11 21 mo.	11 8 mo.	10 57 mo	10 45 mo.	10 15 mo.
Full M'n	14	6 31 ev.	6 18 ev.	6 8 ev.	5 55 ev.	5 26 ev.
3d Quart.	21	9 29 mo.	9 16 mo.	9 5 mo	8 53 mo.	8 23 mo.
New M'n	29	0 29 mo.	0 16 mo.	0 5 mo	11 53 28th	11 23 28th

AMERICAN AGRICULTURIST.

NEW YORK, OCTOBER, 1875.

If we were to believe the statements of the newspapers, which call themselves "Mercantile Journals," we should out of charity open our graneries and cribs, and invite those poor distressed people, the merchants, to walk in and help themselves, and thus be relieved from their distresses. We should feel almost guilty in the possession of so much wheat, and corn, and pork, as the newspapers insist that farmers are holding with such wicked pertinacity, while these poor merchants want all this produce so badly. "Everything is so dull," we are told by the mercantile newspapers, "money is so cheap," and "produce is so plentiful," that prices are ruinously high. Sometimes it is that money is so dear that these poor men can not afford to pay so much as they would like for our grain and pork. Just now it happens to be the other way. Fortunately farmers read the papers now-a-days, and when they go to market they are not so apt to say to the buyers "what can *you afford to give* me for this load of wheat?" as they were some years ago. It may be that the wheat crop all over the world will reach an average, and that the frosts have not injured our late corn crop, but this is very doubtful. Our wheat crop is not up to the average, oats are short, and if corn at husking time be found generally sound and uninjured by the early frosts, still there will be at best but an average crop. But all over Europe, and here as well as there, the cost of every bushel of grain harvested, has been increased ten per cent by the wet weather, and corn has been smothered by weeds, making its cultivation much more laborious. Much grain has been cut with the antiquated sickle or the scythe; old-fashioned cradles have been brought out, and the reapers have been useless; the ground has been so wet and the grain so tangled, that harvesting has cost very much more than it usually does. When grain is thrashed, some will be found light, and the quality of much of it will have been injured by sprouting in the shock. There are exceptions to this in some localities, but this is the general condition of things. This increase in cost of production, must be balanced by an increased value in every market, and farmers must not be misled by the complaints of mercantile papers, to suppose that in the coming down to hard-pan, they must fall faster and harder than any other class. With fair prices for our crops we shall do very well, although there will be little left for the bank to take care of. If prices are not equal to what the crops cost, there might be no compulsion to sell at a loss, and there will be none if farmers will do business on the cash system, and have no debts hanging over them. The trouble is, few farmers know what their produce costs them, and never will know this until they keep accounts.

Hints about Work.

Wheat and Rye may still be sown, even in the northern states, while in the south there is yet ample time to put in this crop. For fodder, or for spring pasturing, rye or wheat may be sown up to Nov. 1.

Rolling Wheat is to be done with judgment. A cloddy surface, mellow underneath, is the best for wheat. If a roller is used at this season, it should be the corrugated kind; but we would rather defer rolling with a smooth roller until spring.

Corn that has not been cut, should be cut at once, if the stalks are to be used as feed for stock. Fodder that has been frozen while green, is neither nutritious nor wholesome for cattle, and the grain is not improved by hanging on the uncut ripe stalk.

Husking Corn.—Hall's husking gloves, if they have once been used, will be considered indispensable, as they will save their price in one season in lessened cost of husking, to say nothing of the protection they give to the hands. After some experience in putting corn away in the barn unhusked, to husk at leisure afterwards, we would never repeat it. A loss through moldy corn can hardly be prevented. Husk early, and leave the fodder to cure in the field.

Potatoes.—The wet season has caused some rotting of potatoes, and much scab in highly manured fields. It would be well to dig the early crop at once, and if any are found diseased, use the worst by boiling them for pigs, and scatter fresh dry-slacked lime over the others in the cellar. When touched with the rot, they are safer in the cellar or root house than in a pit. Potatoes are generally worth 25 cts. a bushel to feed when boiled. It is not economy to sell them for less than that price.

Fall Plowing should be pushed ahead on every fine day. Encourage the fowls to follow the plow, and if a few crows or crow blackbirds alight on the field, do not scare them away. They are doing good service in devouring grubs, beetles, and cut worms. If a farmer can teach a score or two of fowls to follow him in the furrow, they will destroy hundreds of insects every day.

Drains.—Open drains will be choked with weeds at this time, and will need thorough cleaning out. This should be done before heavy rains occur, and while the ground is comparatively dry. The outlets of under-drains should be cleared of weeds and other obstructions.

Clearing up of rubbish in the fields and around fences, should not be delayed, and the corn husks, old straw bands, leaves, etc., which lie about, should be raked together methodically, with a horse rake, and burned. This is more important where chinch bugs abound, because these pests hide in such rubbish, and may thus be destroyed in myriads.

Buildings.—Sheds, stables, pens, and poultry-houses, and the rubbish heaps about the house and barns, should all be cleaned up, and the scrapings used as top-dressing on wheat, or go to the compost heap. Stables should be repaired, white-washed, and made comfortable, broken windows glazed, and doors made tight. Warmth is a great economizer of food and comfort, a great help to health and thrift.

Live Stock.—Different kinds of stock should be kept separate both in the fields and yards. Heavy losses are always occuring from allowing horses, cows, sheep, pigs, and fowls to run in one yard. Horses in their play will kick or scare cows, and a cow near her time, may lose the calf in consequence; cows will hook sheep; pigs will kill and eat lambs and chickens; and small stock are trodden on by the heaviest animals. In the arrangement of the yards for winter, this should be

thought of, and plenty of room given each kind of stock by itself.

Colts should now be handled carefully, and taught to lead by the halter. They should be treated with the greatest kindness and gentleness, and a little extra feed be given, now that the pastures are dry and hard. A pint of crushed oats, or oats and rye bran daily, will be a great help to them.

Milch Cows.—As the pastures become poor, two quarts of meal and bran, per day, should be given to each cow. It is supposed to be "natural" that cows should shrink in their milk at this season. It is "natural" that they should do this when their food shrinks, or when, by exposure to cold rains or frosty nights, a portion of their food is taken from making milk to keeping them warm, but in no other sense. It is poor economy to starve a cow now, and throw away food in feeding her up again in the spring. Old grass has much less nutriment in it than young fresh grass, and the difference must be made up by other feed. Read Prof. Atwater's articles on feeding stock carefully and thoughtfully.

Swine.—Pork is high, and must be high for some time. But when the bulk of the crop comes upon the market, it may not keep its present price. Those who turn off their hogs quickly, will probably make the most money. At any rate, they will make their pork cheaper. It is the quickly fattening animal that pays, and this is precisely where it pays to raise pigs from pure bred boars, because they grow and turn feed into pork quickly.

Store Pigs should be pushed ahead as quickly as possible, before cold weather. One pound of food now, is worth two in January, in making flesh, and the growth next season will be in proportion to the growth made now. Young pigs will be brought on quickly by giving them a mess of skim milk and cooked meal, after having fed them with cooked mush, cold, without milk. This tempts them to eat more food than they would otherwise do.

Sheep.—Fine wool is but 44 cents a pound, which is lower than it has been since 1857. Yet we would not kill off Merino ewes. But we would, for one season, shut up our Merino rams, and buy or hire a Cotswold, and raise some cross bred lambs. There are ups and downs in all businesses, and the too common disposition to discard a staple thing because it is temporarily out of favor, is one of the great faults of our farming. It is especially so as regards sheep keeping and wool growing.

Breeding Ewes should be put to the ram in October, for March lambs. If lambs are not wanted so early, the ram should be kept apart another month. Where flocks run out the whole season, as in parts of the west and south, it is better for the lambs to come in April and early in May. There are fewer losses through cold and late storms.

Poultry.—The hen-house should have a thorough cleansing and whitewashing, to get rid of vermin, and the fowls should be well fed, if plenty of eggs are wanted for the holidays. It is too late to feed hens just when eggs are looked for. At the end of the month turkeys and fowls for the "thanksgiving" market should be put in coops and fed with soft food. Corn-meal boiled in milk, will produce very white and sweet flesh. Poultry thus fed, may be made as fat as possible in three weeks.

Sundry Matters.—Everything about the granaries and corn cribs should be made safe against vermin. Several cats may be fed at the cost of feeding one dog, and as they will earn their feed far more profitably, it will pay to encourage a few cats about the farm. Make holes where they can get in and out of the buildings and under them, but a foot or more above the ground, that skunks may not take possession. Procure a safe lantern, and do not burn kerosene in the barn and stables. A candle lantern is the safest. Provide hooks upon which to hang the lantern in safe places. Cut and grind all the fodder and feed when it can be made to pay. Give salt to the stock regularly but sparingly. Half an ounce a day, is a safe allowance for large animals. See to the water supply, and do not let the wash from the roofs flood the barn-yard. Observe closely, and think about what you see. The result of this is what is called experience, and the more a man has, the more profitable his labor ought to be.

Work in the Horticultural Departments.

Now is ripeness, the fullness of the season, and the harvest! While we look back with satisfaction upon the labors of the season now closing, we must also look forward to those of the season which, after a period of rest, will open anew. The cultivator works with faith in the promise that seed time and harvest shall continue, and with faith too, that whatever advocates of development may claim to take place in uncounted ages, so far as he is concerned, like will produce like. There is no department in which much work of anticipation may not be done, and it will not only save time, which in spring is always crowded, but work done now is much better done. In these golden October days, when it is a pleasure to be in the open air, one can do much more than in the cold, drizzling, uncertain days of April. Of course many things must be done in spring, and at no other time, but there is enough which can be done now to keep all hands busy until cold weather sets in.

Orchard and Nursery.

Picking is the pressing work in the orchard this month. The fruit-grower should know the peculiarities of each variety; some must be marketed at once, some autumn varieties come into eating condition in a week or two after picking, while others keep into early winter. The latest or winter sorts should be left on the trees until there is danger of hard frosts, or the readiness with which the fruit and the leaves part from the tree shows that growth is complete and the fruit has nothing more to gain by hanging. We have often insisted upon the importance of

Assorting, but it is a matter that cannot be too often repeated. No work done by the fruit-grower will *pay* so well. If you doubt it, put up 10 lbs. of fruit as it comes from the tree, and assort the same quantity, making 5 lbs. of extra, 3 lbs. fair, and 2 lbs. seconds, and note the returns of the two lots. A few poor apples will spoil the sale of a barrel of good ones; the whole will be judged by the poorest.

Winter Fruit, whether apples or pears, must be kept as cool as may be and not freeze; do not put it into the cellar until cool nights make it advisable.

Pears vary more, and need more careful watching than apples, and it will pay the grower to study the peculiarities of each sort. New half barrels lined with white paper, with the fruit packed in solid by hand, are the most profitable packages for all except fine specimens of high colored fruit, such as Beurré Clairgeau, Beurré d' Anjou, etc.; these should be wrapped singly in soft paper, placed in single layers in shallow boxes, and sold by count.

Ordering Trees, whether planting is done in fall or next spring, is advisable now. The trees are taken up in less hurry, they are less delayed in transportation, and when at hand can be set at once or in spring as may seem best, they may be kept until spring if

Heeled-in, just as safely as if they stood in the nursery. A trench or ditch is opened in a place where water will not stand; the trees are laid in one at a time, in a slanting position, (about 45°), covering the roots of each with fine soil; each lot of varieties should be separated from the next by a marking stake, so that there will be no confusion. See that earth is well filled in among the roots and no hollows left, and before cold weather the earth should be banked up well around them.

Planting and Varieties.—Refer to the notes given last March. What is said there is equally applicable now. The question of fall planting must be governed by locality; but for all but stone fruits, except where the winter is very severe, fall is the preferable season. Choose small thrifty trees.

Fruit Garden.

Blackberries and Raspberries start so early in spring that it is better to set them in fall, as they receive a check if disturbed in spring unless they are taken up very early. If it is desired to propagate, then root cuttings should be made this month or next, when growth has ceased. Cut the roots into two or three inch pieces and pack in a box with alternate layers of earth. Bury the box where frost will not reach it, and water will not stand. Next spring the pieces are to be planted in nursery rows. In propagating

Black Caps, a little earth should be thrown over the tips which touch the ground, to prevent the wind from blowing them about.

Currants and Gooseberries.—About a year is gained by putting in cuttings of these now, instead of next spring. Make cuttings six inches long, of this year's growth, set four inches apart, in rows, leaving one bud above the surface. If the soil is properly packed, crowded firmly against the cuttings, every one should make a plant.

Grapes.—We get numerous inquiries asking how to keep grapes, without any mention of the kinds. It is of no more use to try to keep Concords until Christmas than it is to try Early Harvest Apples. Catawba, Isabella, Diana, and Iona are the best keepers in general cultivation; Walter and some less generally disseminated, also keep well. Concords, Delawares, and all others with a tender skin, will spoil. The keeping sorts are picked when fully ripe, allowed to "cure" a few days in shallow trays, in order to toughen their skins; they are then packed in boxes, (usually 5 lbs.), and kept at as low and even a temperature as possible.

Strawberries.—Mulch before very severe weather.

Vines may be planted now. Prune after the leaves fall, and save the wood for cuttings if required. Where practicable it is well to remove the vines from the trellis, lay them down and cover with a few inches of earth.

Kitchen Garden.

As soon as the crop is removed from a piece of land, it should have a good dressing of manure and be plowed or spaded. This not only in good part prepares the land for spring, but turns under various weeds that would continue to grow until freezing weather. All clearing up of rubbish that can be done now will save time in spring, and destroy various insects which pass the winter in the pupa state among litter. It is well to have a burn-heap to which all rubbish, brush, and the like, should be taken and burned, and the ashes saved for garden use. A garden of considerable size needs a place where three *heaps* can be made; (1), the compost heap where all green refuse and weeds without seeds, sods, and the like may be converted into manure. (2). The burn-heap, where seed-bearing weeds, if any get large enough, can be burned with the rubbish, and (3), a heap for stones that are raked out of the soil, and which may come in play in making paths, and for other uses.

Asparagus beds may be set in the fall as well as in spring. Give old beds a thick coat of manure before winter, and spade or fork in lightly.

Beets and Carrots.—Those for table use should not be touched by frost; they may be kept fresh and plump by packing in sand; Carrots may be preserved the same way.

Cabbages will continue to grow until hard frosts. Young plants for wintering are put in cold frames late this month or early next.

Celery.—That for winter use if not already handled, should be attended to; the soil is drawn towards the plants with the hoe; the leaves are held close together with one hand, while the loose soil is drawn around the plant with the other hand, and the job finished with the hoe. The object is to get the leaves in an erect compact clump, ready for storing. On the large scale

Celery is Stored in trenches a foot wide and as deep as the plants are tall. It is set in closely, and a little litter put over, which is increased as the cold increases. Small lots are best stored in a cool cellar in boxes nine inches wide, about as high as the celery, and of any convenient length. A few inches of earth are placed in the bottom, and the

plants packed in as close as they will stand. Wider boxes bring too great a mass of leaves together, and there is danger from rotting.

Cold Frames should be ready for cabbage, cauliflower, lettuce, and other plants wintered in them.

Parsnips and Salsify are both handy, and a portion may be left in the ground to be dug in spring; some think them improved by the winter's freezing. Put earth with those stored to keep them firm.

Spinach.—Keep the ground loose, and apply a covering of hay, etc., only when hard frosts come.

Squashes.—Cut if there is danger of frost, place in heaps and cover with vines. Handle carefully if you would have them keep well during the winter.

Sweet Potatoes.—Dig as soon as frosts touch the vines. Keep dry and where the temperature will not go below 60°.

Manure.—Make all that is possible, and save every fertilizing material that may be going to waste in the neighborhood; compost with muck or dry earth.

Flower Garden and Lawn.

This month usually, at least in the northern states, brings two or three nights of frost in which all the most tender plants are killed, and then there will often be two or three weeks of charming weather in which those plants not cut down, bloom more profusely than ever. It will pay to provide

Protection against Frosts, and a very little thing will answer; newspapers, if they can be kept from blowing away, will do. We prolong the season of our Cannas several weeks by setting a pole in the center of the bed, and rigging an old sheet tent-fashion. The garden is often neglected as the end of the season approaches, but it should show

Good Keeping to the very end. Remove old flower stalks, cut back decaying herbaceous plants, and keep down late weeds. Neatness should compensate for any absence of display.

Dahlias, when the frost blackens the foliage, should be cut down; the roots may be left until cold weather approaches, when they may be dug, labeled, and stored wherever potatoes will keep.

Bulbs.—Procure the supply of spring flowering bulbs early. The catalogues of the dealers give full directions for treatment.

Tender Bulbs, such as Tiger Flower, Jacobean Lily, Gladiolus, etc., must be taken up before hard frosts, dried, labeled, and wrapped in paper; store in a cool place, where it is not too damp, and where they will not freeze, and away from mice.

Cannas.—If the frost touches the leaves, cut at once; the roots will not keep if the foliage is much frozen; store in a warm dry place.

Peonies.—Divide early this month if not done last.

Greenhouse and Window Plants.

Everything about the greenhouse should be in readiness for sudden occupation. All repairs made, the heating apparatus in working order, and all places where insects can harbor, cleared out, coal or other fuel should be laid in, and pots and soil, as well as all other requisites, provided.

The Cellar is an important adjunct to the greenhouse, and especially so to the window garden, as there many plants may be kept in reserve, and if light, all the potting and other rough work with window plants, bulbs, etc., may be done there.

Bulbs should be potted as soon as received, and kept in a dark cellar to form roots.

Plants for Forcing, such as Bleeding Heart, Deutzia gracilis, Astilbe Japonica, and others are to be potted and put in the cellar or cold frame.

Taking in Plants that have been turned out for the summer, must be done before frost. It hardly pays to bother with old Geraniums and other quick growing things which usually get out of shape, but new plants for the window or greenhouse should have been provided last month from cuttings.

Ventilate freely, whether the plants are in greenhouse or window, that the transition to a close atmosphere may be gradual.

Insects.—Examine every plant before it is taken in, and if any insects are found, place the plant under hospital treatment until clean.

Window Boxes and Hanging Baskets should now be filled, and the plants well established before they are taken in-doors.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Sept. 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 d's *this* m'th	314,000	4,913,500	3,918,000	29,000	41,000	1,061,000
27 d's *last* m'th	361,000	4,117,000	1,984,000	24,000	——	411,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 d's *this* m'th	378,000	5,774,000	4,163,000	19,000	36,000	1,975,000
27 d's *last* m'th	497,000	8,711,000	3,105,000	49,000	84,000	1,901,000

2. *Comparison with same period of this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 days 1875	314,000	4,913,500	3,918,000	29,000	41,000	1,061,000
29 days 1874	316,000	3,671,000	1,997,000	51,000	28,000	758,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 days 1875	378,000	5,774,000	4,163,000	19,000	36,000	1,975,000
29 days 1874	348,000	5,143,000	4,716,000	26,000	——	2,304,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Sept. 6, 1875	1,251,321	1,033,086	11,216	1,963	214,069	293,081
Aug. 9, 1875	553,894	783,396	21,608	1,163	591,180	201,029
May 11, 1875	969,894	1,542,924	16,124	16,537	54,209	229,655
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,617
Nov. 9, 1874	3,680,141	1,727,510	19,113	117,185	794,722	135,882

4. *Exports from New York, Jan. 1 to Sep. 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1875	1,282,722	18,140,047	8,387,632	152,333	225	88,172	235,865
1874	1,529,415	21,462,895	15,829,600	533,050	3,320	86,896	272,105
1873	966,067	12,166,224	9,813,745	551,093	19,226	26,591	91,270

5. *Receipts at head of tide-water at Albany each season to Sep. 9th.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875	54,800	11,262,200	3,693,700	83,500	82,900	1,155,600
1874	57,600	13,468,600	12,811,000	189,800	74,100	1,263,100
1873	66,600	9,183,700	10,071,100	671,100	27,000	2,233,700
1872	71,000	4,215,000	17,434,000	859,000	470,000	4,811,000

CURRENT WHOLESALE PRICES.

	Aug. 12.	Sept. 13.
PRICE OF GOLD	**114**	**117**
FLOUR—Super to Extra State	$5 40 @ 7 15	$5 15 @ 6 50
Super to Extra Southern	5 35 @ 8 75	5 60 @ 8 50
Extra Western	6 10 @ 8 75	5 60 @ 8 25
Extra Genesee	6 50 @ 7 75	6 00 @ 7 25
Superfine Western	5 40 @ 6 00	5 15 @ 5 65
RYE FLOUR	5 10 @ 6 25	4 50 @ 5 75
CORN-MEAL	— @ —	3 50 @ 4 50
WHEAT—All kinds of White	1 55 @ 1 70	1 35 @ 1 58
All kinds of Red and Amber	1 35 @ 1 60	1 05 @ 1 48
CORN—Yellow	81½@ 85½	75 @ 78
Mixed	75 @ 81½	65 @ 75
White	90 @ 92	Nominal
OATS—Western	61½@ 71½	40 @ 59
State	66 @ 72	40 @ 60
RYE	97½@ 1 10	90 @ 1 00
BARLEY	1 20 @ 1 25	1 15 @ 1 30
HAY—Bale, ℔ 100 ℔s	70 @ 1 12½	65 @ 1 10
STRAW, ℔ 100 ℔s	50 @ 90	50 @ 85
COTTON—Middlings, ℔ ℔	14¾@ 14¾	14¾@ 14¾
HOPS—Crop of 1875, ℔ ℔	18 @ 25	15 @ 22
FEATHERS—Live Geese, ℔ ℔	35 @ 60	35 @ 60
SEED—Clover, ℔ ℔	11¼@ 11¾	13 @ 13¼
Timothy, ℔ bushel	2 70 @ 2 87½	3 00 @ 3 15
FLAX, ℔ bushel	1 85 @ 1 90	1 75 @ —
SUGAR—Refin'g & Grocery ℔ ℔	6¾@ 9¾	7 @ 9½
MOLASSES, Cuba, ℔ gal	36 @ 45	32 @ 43
New Orleans, ℔ gal	70 @ 72	62 @ 68
COFFEE—Rio (Gold)	17½@ 20	17½@ 20
TOBACCO, Kentucky, &c., ℔ ℔	9 @ 24	8 @ 25
Seed Leaf, ℔ ℔	6 @ 55	7 @ 45
WOOL—Domestic Fleece, ℔ ℔	25 @ 58	25 @ 55
Domestic, pulled, ℔ ℔	25 @ 50	25 @ 48
California, clip	15 @ 34	17 @ 32
TALLOW, ℔ ℔	9 @ —	9¾@ 9¾
OIL-CAKE—℔ ton	40 00 @45 00	41 00 @46 50
PORK—Mess, ℔ barrel	21 65 @21 75	21 25 @ —
Prime Mess, ℔ barrel	19 25 @19 50	19 00 @19 50
BEEF—Plain mess	8 00 @ 9 50	8 00 @ 9 50
LARD, in tres. & barrels, ℔ ℔	12¾@ 14¼	13½@ 13¾
BUTTER—State, ℔ ℔	16 @ 35	22 @ 35
Western, ℔ ℔	14 @ 29	15 @ 33
CHEESE	3 @ 11¾	2 @ 10¼
BEANS—℔ bushel	1 50 @ 2 90	1 65 @ 3 00
PEAS—Canada, free, ℔ bu	Nominal.	1 20 @ 1 30
EGGS—Fresh, ℔ dozen	21½@ 25	18 @ 22
POULTRY—Fowls	13 @ 18	8 @ 17
Turkeys—℔ ℔	14 @ 17	16 @ 20
Geese, ℔ pair	1 25 @ 2 25	1 25 @ 2 50
Ducks, ℔ pair	50 @ 81½	60 @ 95
PIGEONS, ℔ doz	1 75 @ 2 00	1 50 @ 2 37½
WOODCOCK, per pair	60 @ 75	80 @ 95
SPRING CHICKENS, ℔ ℔	16 @ 20	14 @ 18
TURNIPS ℔ bbl	1 25 @ 1 50	75 @ 1 25
CABBAGES—℔ 100	1 75 @ 5 00	1 75 @ 3 75
ONIONS—℔ bbl	2 25 @ 4 00	1 25 @ 1 75
POTATOES—℔ bbl	75 @ 2 25	75 @ 1 50
SWEET POTATOES—℔ bbl	— @ —	1 25 @ 3 50
BROOM-CORN	7 @ 13½	7 @ 13
PEARS, per crate	75 @ 5 00	50 @ 4 00
PEARS, ℔ bbl	— @ —	2 75 @ 8 00
PLUMS, ℔ bush	— @ —	2 00 @ 4 50
GRAPES, ℔ ℔	— @ —	2 @ 10
APPLES—℔ barrel	1 75 @ 3 50	1 00 @ 3 25
CRANBERRIES ℔ box	— @ —	— @ —
PEACHES, per crate	25 @ 2 00	25 @ 1 25
GREEN CORN, per 100	50 @ 1 00	60 @ 1 00
GREEN PEAS, ℔ bbl	1 75 @ 3 00	— @ —
TOMATOES, ℔ bush	75 @ 1 75	20 @ 60
STRING BEANS, per bag	50 @ 1 50	— @ —
CUCUMBERS, per bush. box	50 @ 75	— @ —
WATERMELONS, ℔ 100	7 00 @35 00	4 00 @35 00
SQUASH, ℔ bbl	50 @ 1 25	50 @ 1 25
CAULIFLOWER, per bbl	3 00 @ 5 50	— @ —
MUSKMELONS, ℔ bbl	— @ —	50 @ 2 00

Gold has been up to 117¼, and down to 112¾, closing Sept. 11th at 117, as against 114 on Aug. 12th.... The movements in Domestic Produce have been quite liberal since our last, but prices have been generally ruling lower, under freer offerings of the leading kinds.... The Breadstuff trade has been fairly active, the export demand having been good, but with more favorable harvest and crop reports, and more urgency on the part of receivers to realize, prices have declined materially. New crop winter Wheat has been arriving in very poor condition, and has been quite difficult to market. A few of the best samples have been taken for shipment. New crop Oats have also been coming forward in very poor order, much of the receipts having been unsound. Considerable purchases, on speculative account, have been made of prime new Mixed Chicago Oats, chiefly for October delivery, at 48c. per bushel. New crop Rye has been attracting very little attention, and has been much depressed in value. New crop Barley has been more sought after, mostly for forward delivery, closing quite firmly.... Provisions have been unusually variable as to price, on free dealings, closing generally in favor of purchasers.... Cotton has been quoted lower, under the very liberal arrivals of new crop at the shipping ports. At the reduced figures, the dealings have been comparatively large, chiefly for forward delivery.... Wool has been more sought after toward the close, and has been quoted steadier.... Tobacco has been fairly active within our range.... Hay has been in less request, and quoted cheaper.... Seeds have been quiet, and at the close easier in price.... Hops much lower, and slow of sale.... Ocean freights have been moderately active, but quoted lower. Flour by sail and steam to London, 2*s.* 3*d.* per bbl.; Grain by sail, to do., 7*d.* @ 7½*d.* per bushel; Grain by steam to Liverpool, 6½@ 6¾*d.*, and by sail, to do., 6¼@6½*d.* per bushel. Grain tonnage for Cork and orders, 6*s.* 3*d.*; for Penarth Roads, and orders, 5*s.* 9*d.* @6*s.*; for the Continent, 6*s.* 3*d.* @ 6*s.* 6*d.* per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Aug. 23	8,209	108	3,030	22,162	17,668	51,168
Aug. 30	11,522	66	3,144	24,747	16,975	56,454
Sept. 6	8,908	60	2,672	31,268	17,919	60,827
Sept. 13	9,890	63	2,410	27,341	18,739	58,473
Total for 4 Weeks	38,529	297	11,286	105,518	71,301	226,922
do. *for prev. 5 Weeks*	46,083	504	16,680	136,110	111,324	310,701

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,630	74	2,821	26,79	17,825
do. do. *last Month*	9,216	100	3,236	27,222	22,265
do. do. *prev's Month*	8,453	95	3,860	21,629	25,847

Beeves.—Serious complaints have been made by shippers of stock via Albany, of the treatment of cattle in the change to and from the feeding pens in that city while on their way to New York. Owners of stock have charged that the treatment is "shameful and outrageous." The effect is seen to some extent in the fact that in one week of the past month, 6,800 head were sold at the yards in Jersey City, which are supplied by the Erie and other railroads, while but 2,000 were sold at the yards at 60th street, New York, supplied by the New York Central Road. Cruel and inhuman treatment of stock en-route to the market is unprofitable to all concerned, and in this fact lies the strongest protection for the unfortunate animals. The market for the past month has been unsteady. Opening strong, it gave way soon after to the extent of ¼c. per lb., and another ½c. the following week. This last loss was recovered the same day with a firmer tone to the market. At the close the tendency was downwards for all grades except extra. The best qualities of cattle sold in small lots at 13¼c.@13½c. ℔ ℔. to dress 58 ℔s. per gross cwt.; the range for native steers was 8¾c.@13c. ℔ ℔ to dress 55 to 58 ℔s., and Texan and Cherokee cattle sold for 7½c.@9c. ℔ ℔ to dress 54 to 56 ℔s. These prices are fully ½c. ℔ ℔. above the rates of the same week last year.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Aug. 23	7½@13½c.	11 @12 c.	11¼c.
Aug. 30	7½@13½c.	10½@11½c.	11 c.
Sept. 6	7 @13½c.	10½@11½c.	11 c.
Sept. 13	7½@13½c.	10½@11½c.	11 c.

Milch Cows.—The market has been dull throughout the month, and the hopes of dealers for a better feeling are not yet realized. The demand slowly takes up the meager offerings. Prices as we close are $50 to $70 per head with a dull market.... **Calves** have been in dull but steady demand through the month, easing off somewhat last week. Fair to good veals sold at the close at 8½c.@9c. ℔ ℔. live weight; poor veals brought 6½c. @7c. ℔ ℔. Grass calves sold for $6.75 to $8 p r head for good, and $5 50 to $6 for poor... **Sheep and Lambs.**—The market advanced ¼c. ℔ ℔. at the beginning of the month's business, with a brisk trade. The improvement has been maintained notwithstanding the increased receipts, and the market closes with an active demand for good sheep at 4½c.@6¼c. ℔ ℔. live weight, and for lambs at 6¼c.@8¼c. ℔ ℔. Poor stock is not in favor, and is dull of sale. **Swine.**—The demand has been chiefly for dressed hogs. A few heavy State live hogs have been sold at 8¾c. ℔ ℔. weighing 250 to 300 ℔s. Nearly all the arrivals have been consigned direct to slaughterers. Dressed hogs have sold at 11c. ℔ ℔., but this price was not maintained, and the market for this stock fell back to 10c.@10¾c., which are the closing rates. A few live hogs were sold at 8¼c.@8½c. ℔ ℔.

See the Supplement with this Number.

The Publishers print an Extra Sheet, (making **32** pages in all, this month). In this they give their Premium announcements for the "Centennial Year," which year, by the way, *has already begun*, so far as subscriptions to this Journal are concerned. That is to say, all new subscribers now or hereafter received for 1876, are supplied with the remaining numbers issued this year after the reception of their subscription, *without extra charge*....All our readers will be interested in much that is said and pictured in the Supplement Sheet. No doubt many will, as hitherto, embrace the opportunity to supply themselves *without cost*, with some of the good articles offered. It is comparatively an easy matter to do, as many thousands have proved....As Editors, we promise to spare no effort to meet the wishes of the Publishers, to have the *American Agriculturist* for the Centennial Year exceedingly valuable to *all* its readers. We trust our readers will agree with us, that a Journal, like this, going into a family for a year, will not only exert a healthful influence in stimulating thought and improvement, and thus elevate the mind standard of all cultivators of the soil, and of others too; but that it will also help guard against errors, against imposition, and assist all to make their labor more profitable. With this view, we invite all to lend a kind influence in making this Journal even more widely known, and in drawing to it as readers, many who are now without its visits. This we ask as a friendly favor, aside from the rewards which the Publishers offer on a liberal scale to those who respond to their propositions. At least, we ask all to read what the Publishers propose on the first and second pages of the Supplement, and to the Descriptions of Premiums in the succeeding pages.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

N.B.—The New Postage Law.—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

The New Post-Office.—The office of the *Agriculturist* has a remarkably central position. Uncle Sam thought he would get into a good neighborhood when he selected a site for a new post-office for the City of New York, as he put it diagonally opposite and within a stone's throw of our office. The building is the largest post-office in the country, and it is arranged in a most convenient manner. We are much obliged to the Uncle, as it makes the sending and receiving of our immense mails a comparatively easy matter. Strangers who visit New York should not fail to take a look through this spacious and magnificent structure, which, taking into account its architecture, its finely but not fantastically cut granite, etc., is one of the noblest buildings in this country, and is excelled by few other public edifices in the world.

Subscribe **this month for all of 1876,** and get **November and December** Numbers FREE.

The Useful House-Plans published in every number, are giving great satisfaction; they bring many letters of thanks, and even in these "hard times" many houses, taking the country together, are being erected, some following the plans given, and others varying them more or less, to suit their individual tastes or circumstances. The specifications and estimates of cost given are of great value, as a *basis* for calculation, even where prices vary materially from those named. The quantities being given correctly by a skillful architect, like Mr. Reed, the difference in cost of the lumber, timber, etc., is easily learned by any one on inquiring in his own neighborhood. Everybody wants a house of some kind, and most expect at some not very distant day to have something different from their present habitation. The study of any plans helps educate one's taste, and furnishes useful hints, and any one intending to expend even $500 on a house will be likely to get hints worth ten times their cost by investing $5 or $10 in books on architecture. The readers of the *American Agriculturist* may expect continued plans and suggestions in most, if not all, future numbers of this journal, which will alone be worth far more than the subscription cost of the paper.

Hints to Advertisers.—If the Publishers of this Journal were to offer to put one of your cards inside every copy of the paper sent out, you would jump at the chance, for though half or three-fourths of them would drop out and be lost, and only the first one opening a paper would be likely to see the enclosed card, you would reason that if only one in a hundred were preserved and examined, it would probably pay. Well, 1,000 cards with 2 by 2¼ inches of decently printed surface, would cost at least $2.00. You would say if 1,000 would pay, 2,000 would, and so on up to 100,000, costing $200. But for $40 to $80, according to the place occupied, you can have such a card electrotyped into the pages of this paper, where it cannot fall out, where it will be constantly before *each* reader, and be ready for frequent and future reference, as most of these papers are before the readers for 3 or 4 weeks, and are then retained on file or bound, and probably not less than 500,000 persons read each number of the paper, as a majority of them go to several families. If you advertise by circular, each 1,000 will cost you from $1.50 upward for printing, $10 for postage, $1.50 to $2.00 for the cheapest envelopes, and $2 to $3 for addressing them, besides the cost of getting names and addresses, or at least $15 per 1,000, or $1,500 for 100,000! which would pay for several full columns of advertising. Further, the select character of the advertisements in this paper is a sort of guarantee to the reader that he will not be swindled, which is not possessed by loose circulars and cards that anybody may have put into papers on their journey to you. In respect to choice company, few other journals in the world are so careful to extract all unreliable men and things. The readers of the *American Agriculturist* know this fact, and they are more ready to patronize the advertisers in this paper. Its columns are, therefore, many more times valuable than ordinary mediums, aside from the great circulation here enjoyed.

Adorn Your Homes.—Read the advertisement on third cover page of this number, and tell your friends and neighbors how easily they can make their homes attractive.

A new Enemy to the Raspberry.—Mr. W. H. Coe, Florist, Lock Haven, Pa., sent us a specimen of raspberry cane upon which a Dodder (*Cuscuta compacta*) was perfectly established; Mr. Coe states that the patch where it was found is upon ground which was formerly a swamp. We have known this dodder to injure young apple trees in the nursery. Another species, figured in December last, attacks Lucern or Alfalfa in California. Being an annual, it is not difficult to get rid of; the affected stems should be cut out, and burned, to prevent the ripening of any seed.

The American Pomological Society closed its 15th biennial session at Chicago on Sept. 10th. The meeting was one of the largest and most interesting ever held by the Society; the western pomologists being out in full force, and the number of members from the eastern and other states unexpectedly large. For details of the proceedings, reference must be made to the published transactions. The meetings were presided over by Col. Wilder, who, though verging upon 80 years, fills the presidential chair with all the vigor of former years. The officers of previous years were for the most part re-elected, the principal ones being Marshall P. Wilder, President; Thomas P. James, Cambridge, Mass., Treasurer; and W. C. Flagg, Moro, Ill., Secretary. The next biennial session will be held at Baltimore, Md. The Society accepted the invitation of the Penna. Horticultural Society to meet at Philadelphia in Sept. of next year, as their guests; this is not to be a business meeting, but rather a social re-union in honor of the Centennial. A large and very fine exhibition of fruit was made by the members, but it was unfortunately placed in the building of the Chicago Inter-State Industrial Exposition, where the collections were so much scattered and in places so unfitted for the purpose that the fruit could not be seen to good advantage. The exhibition of seedling pears, by B. S. Fox, of California, and Clapp Brothers, Dorchester, Mass., and of new grapes, by J. H. Ricketts, Newburgh, N. Y., attracted special attention....Among the courtesies accepted by the Society, was a drive to South Park, offered by the Commissioners, and a banquet given by the Illinois Horticultural Society.

Sundry Humbugs.

A correspondent suggests that a burning candle by which moths are attracted, with some of the insects singed and helpless, while others, regardless of the fate of their companions, still fly towards the danger, would make a good head-piece to our humbug column. He thinks that humbugs would not be successful were it not for the folly of the people, who run after them—a view of the case we have presented in former numbers. We gratify our friend by adopting his idea, and regret that there is one thing which can not be shown in an engraving. To make the picture truthful, we should represent the moths, after they had recovered from the effects of one singeing, at length regaining the use of their wings, and going as fast as before, directly to another and similar candle. Some persons are teachable, and do not need to run their heads against a stone wall more than once, to find out that they get the worst of it; such persons, if they have been foolish enough to be caught by some humbugging scheme, do not repeat the folly—one dose is a cure. Others are not so tractable, but go on investing in one thing after another, in the vain hope that luck will turn in their favor. Where such persistence in folly is accompanied by loss of money only, it is bad enough, but where

MONEY AND HEALTH

are both squandered, the case is deplorable. Some letters that come to us from these victims, are truly pathetic, and it is difficult to read them unmoved. Such letters are mostly from young men who, frightened by the circulars of the private disease quacks, have sent every dollar they could raise in the hope of a cure, to one and then another, until, having made themselves poor, and broken down in bodily health, and in a mental condition bordering on insanity, they write to us in despair to know what they shall do. They know that they are "going to a premature grave," and it is singular how generally they talk of going away from home, where the cause of their death may not be known to their families and friends. Such letters we have usually answered personally, but some remarks in a recent article have called out an unusual number, more than we can afford time to reply to by mail, and we briefly answer them here. Such young men need to do two things: (1) stop taking quack medicine, and (2) cure your mental disease. The second is perhaps the first step towards a bodily cure. We can see plainly by the tone of these letters, that each writer has brooded in secret over his trouble, whatever it may be, has fed his imagination by reading all the circulars of quacks, which are issued for the sole purpose of frightening such as he into paying high prices for their stuff, and have magnified every ache or slight disturbance, into a symptom of dreadful import. It is of the greatest importance that such a person should get out of this state of mind, and he can best do it by confiding his troubles to some one else. He must be badly off who has not some bright, hopeful friend who will cheer him in his despondency, and talk him out of the notion of dying just at present. Then find some good physician at home, and in this case we should prefer a young to an old one, and fol-

low his advice, which will in most cases be accompanied by very little medicine. But as you value your health, have nothing to do with any one who will undertake to treat your case from a distance, and without seeing his patient. But to return to some of

THE MOTHS WHICH GET BURNED.

One of them got so doubly singed a short time ago, that we briefly state the case. It hardly seems possible that there could be found at this late day, a person so foolish as to put himself into the hands of the saw dust swindlers, or dealers in counterfeit money. It seems that there are those vile enough to wish to buy the "queer," but the whole trick has been so often exposed that one would think that even these would be shrewd enough not to trust the other scoundrels, the sellers. Not so thought Henry Yerling, of Tipton Co., Ind. He had bitten at the offer to furnish him with $20,000 of counterfeit for $150 of good bills, so he came to New York, met the "shovers" by appointment at a hotel, paid his good money, and received a box supposed to contain the bad. The sharpers told him to hurry off for fear of the U. S. officers, and they accompanied him across the ferry to Jersey City, where they got into a quarrel, were all arrested, and taken to the police station. The box was there opened, and was found to contain, not sawdust this time, but *shavings*, whereupon Yerling was much enraged, and took out his revolver, but was prevented from shooting any one. As Yerling would make no charge against the other rascals, for fear of implicating himself, they were let off. Henry Yerling comes out of the scrape very badly singed; he lost his $150, and his traveling expenses, had the mortification of being arrested, and what is worst of all, has had his name published from end to end of the country, as wicked enough to deal in counterfeit money, and foolish enough to get swindled in the trade. This, and a similar case which occurred in Bedford Co., Pa., shows that the "shovers of the queer" are still at work, and that they can still find persons dishonest enough to accept their proposals; and though the subject is one to which we have often alluded, we refer to it again in the hope that the fear of exposure, if nothing else, will keep the wickedly foolish out of the hands of the sharpers. We haven't a particle of pity for those who get caught, and while we are glad they lose their money, we do not want another set of rascals to get it. ..A Correspondent in Virginia asks our opinion of

A "C. O. D.," ESTABLISHMENT

in Baltimore. He states that he recollects a concern in Chicago, which a few years ago operated in a similar manner, and which burst up, leaving many persons minus their money. So do we recollect it, and long before the end came, advised people to have nothing to do with it. It is very safe to beware of unusual methods of selling goods. Such houses as A. T. Stewart & Co., Lord & Taylor, and other immense houses, do not require any machinery of "numbered slips" or "coupons," in disposing of their wares. We are quite unable to see the need of this method of selling goods, which is the case with our correspondent, and we advise him, and all others, not to play any game they do not understand. Of the Chicago concern, our correspondent writes: "Several good people whom I know, have suffered in reputation ever since, by acting as agents for the swindlers. They went around among their friends and took orders for goods, and a certain amount of cash in advance, which of course was lost, and their friends and patrons are often heard to say that they do not think the money was ever sent off by the agent. These persons ought to know that in this state they should take out a license—costing $100—before they take orders from their friends in favor of the great C. O. D. House."

THE TEXAS MUTUAL BENEFIT ASSOCIATION,

Is acting very much like a swindling concern. It resorts to the old dodge of informing persons that they have not yet paid for their five tickets, (giving the numbers), and informing them that one of the tickets has drawn a valuable prize. The sum of $2 only is wanted, to pay for the tickets and secure the prize. This is a stale old trick, Mr. Secretary "Choate Somerby," which we stated some time ago looked very much like "Cheat Somebody," and this circular of yours shows that the play upon words was prophetic....The scheme of the "Montpelier Female Humane Association," of Va., is nothing more or less than a lottery. Our opinon in regard to raising money in this manner for any cause, however worthy, and backed by any names, however respectable, is too well known to make it necessary to repeat it. We make no distinctions in favor of any, when we denounce the whole system.

NO YOU DIDN'T, SIR!

"W. W." writes from Minnesota, that seeing the advertisement of a "Mercantile Prize Association," in various daily papers, and he "thinks in the *Agriculturist*," but does not "remember for certain," he invested in a ticket, and afterwards sent for another ticket, and writes complaining that he gets no return. To be sure the tickets were only 25 cents each, but we would not have "W. W." be in doubt whether he saw the advertisement in the *Agriculturist*, and can assure him that he did not. We do not publish that kind of advertisements.

A PERENNIAL HUMBUG,

is Joseph T. Inman. "Men come, men go, but Joe runs on forever"—almost. It will be 10 years next month since we first held up Joseph to the admiring gaze of the people. They who were boys then, are now men, and many who have read the first notice of Joseph, have gone beyond the reach of quack medicines, and yet Joseph turns up again every now and then, with the same old story. Now he comes, possibly to celebrate the 10th anniversary of our—well, not acquaintance, but first knowledge of him. Apparently out-living old "Sands of Life,"—here he is with his "Corassa Compound," which, whatever other qualities it may have, is at least long-lived. It has seen the rise and fall of many rivals; "Old Mother Noble" came and went; "Clark Johnson, M.D.," dawned upon us and faded into nothing; "Uncle Joe" arose with his "Bell-tongue syrup," and went down again, and "Aunt Lee," and all the rest of the long procession, have "gone where the woodbine twineth." Yet J. T. Inman, and his "Corassa Compound," are like Day and Martin's Blacking, "always on hand." As this Inman is a type of a class, let us see his way of doing business. He was a pastor. He went to Peru as a missionary; he was in a horrible state for a missionary to be in, and it would hardly be proper to repeat his catalogue of afflictions; a learned and venerable physician, Fernandez Colina—it is well to be particular as to names—put him up to the Corassa Compound, and of course Joseph I. immediately began to get well. There is no secret at all about the Corassa Compound. You see, it is made of *Corassa Apimis, Selarmo Umbelifera, Alkermes Latafolia*, and *Carsadoe Herbalis*. Get them and mix them, and you will be all right. But there is one drawback, "the drug stores can not be relied upon to procure new remedies of pure quality," so Joe himself puts it up ready for use, "at the price which it costs me. My means make me independent, [lucky Joe!]. I seek no other reward for sending the remedy, than the satisfaction of doing good," at the rate of $3.50 per pound, by mail. Inman—this is what the boys call "too thin." It is not necessary to add that there are no such plants as this fellow pretends to put into his stuff, and all that show of names is bosh, and a very poor imitation of botanical names. The circular contains certificates from a London, a Parisian, and a New York "M. D.," but neither is dated, nor is there any date in the whole circular. But why should there be, this is one of the perennial humbugs, and the circular is just as fresh now as it was 10 years ago, and will answer its purpose 10 years to come—which is that of humbugging the unfortunate.

October Fairs.—There are several important fairs to come off this month—especially in some of the southern and western states. The Georgia State Fair on the 18th promises to be of special interest; the fair grounds of the society at Macon are regarded as the finest in the country. See list of other fairs on page 399.

The New Jersey State Horticultural Society.—New Jersey, a state so largely identified with horticultural pursuits, has heretofore had no Horticultural Society. In August last a meeting was called to consider the matter, which resulted in an unexpectedly large and very spirited assemblage at New Brunswick, at which an organization was perfected. The officers chosen were: *President*, George Thurber, of Bergen Co., Post-office address, 245 Broadway, N. Y.; *Vice-Presidents*, (one from each county represented), A. S. Fuller, Ridgewood, Bergen Co.; C. W. Badger, Newark, Essex Co.; John Van Doren, Manalapan, Monmouth Co.; John S. Collins, Moorestown, Burlington Co.; Edwin Allen, New Brunswick, Middlesex Co.; Geo. M. Cole, Deerfield, Cumberland Co.; N. W. Parcell, Elizabeth, Union Co.; Ezra Dayton, Bernardsville, Somerset Co. *Recording Secretary*, E. Williams, Montclair, Essex Co.; *Corresponding Secretary*, B. B. Hance, Red Bank, Monmouth Co.; *Treasurer*, W. H. Goldsmith, Newark, Essex Co.; *Executive Committee*, P. T. Quinn, Newark, Essex Co.; J. W. Hayes, Newark, Essex Co.; S. C. DeCou, Moorestown, Burlington Co.; Thos. Cole, Deerfield, Cumberland Co.; D. McLaury, New Brunswick, Middlesex Co.; President, Secretaries, and Treasurer. The next regular meeting will be held at New Brunswick, Jan. 20th, 1876, at which a large gathering is expected, and when the future operations of the Society will be decided upon.

The New England Fair.—The 12th annual exhibition of the New England Agricultural Society was held at Manchester, N. H., from the 7th to the 10th of September. It was a very successful exhibition, being mainly a farmers' fair with few of the "show" herds which are frequently seen at fairs. The entries of live-stock were numerous, and the pens were well filled. The working cattle made the most conspicuous show. These were generally very fine, the majority of them being estimated to weigh over 4,000 lbs. per yoke. One well trained team of eleven yoke belonging to Mr. J. E. Perry, attracted much notice. The Short-horn cattle made a good show; the Ayrshires, Jerseys, Devons, and Herefords, were only fair. The sheep and pigs were not such as might have been expected, neither was the poultry. A "bench show" of dogs was a new feature, and perhaps an admissible one at an agricultural fair, if we consider that the more dogs are cared for the less injury they may do to the farmers' flocks. The dogs, however, received more attention than the sheep, which is certainly reversing their order as to intrinsic value. Fruits, vegetables, and dairy products, were in small supply, but the trotting ring and some other attractive shows of questionable value in an agricultural fair, made up for all deficiencies in drawing a crowd and making the exhibition interesting to the visitors and financially successful to the Society.

Much Rain.—Some heavy rain-falls during the past wet season have been reported, but we have seen nothing to exceed that which fell in Wytheville, Va. A correspondent there states that on one day near the end of July, three inches of rain fell in three-quarters of an hour! Very good for Wytheville.

The Buckeye Mower.—At the great field trial of mowers by the National Agricultural Society of Switzerland, held at Zurich on the 27th of May, the first premium was awarded to the Buckeye. It has also received the past season a first premium at Birgfield, Germany; Uithoorn and Vintereen, Holland; the highest honors at Brummen and Oegstgeest, Holland; the first premium at the field trials at Hanover, New Hampshire; at Danvers, Mass., and at Thorn Hill, N. Y.

Periodical for Dairymen.—"J. H.," Hannibal, Mo. There is a large amount of practical information upon dairy matters in every number of the *American Agriculturist*. Dairying is made a subject of special interest as befits its importance as an agricultural industry, and we know of no other publication that would be better for a beginner than this. The price of the yearly bound volumes, which contain as much matter as several books, and are a library in themselves, is $2 each at this office, or if sent by mail, prepaid, $2.50 each. The yearly subscription is $1.60, postage paid; it can begin at any time, but those subscribing *this month*, for 1876, will receive gratis the remaining numbers for 1875.

Importation of Percheron Horses.—Mr. M. W. Dunham, of Wayne, Du Page Co., Ill., informs us of his return from France with 33 Percheron stallions and mares of the choicest blood of France. Many of these stallions were "approved" by the French Government and subsidized to the extent of 300 to 400 francs, ($75 to $100), per annum each, for the purpose of improving the horses of the country. Their weights vary from 1,400 to 2,000 lbs. We have before noted Mr. Dunham's enterprise in the introduction of Percheron horses, and are happy to record this his latest venture in this line. He informs us that he has now at his farm at Oak Lawn, (near Wayne, Ill.), 40 stallions fit for service, besides mares, yearlings, and colts, which are always ready for inspection by those who are interested in procuring this valuable stock.

Sending us Fruit.—Every season there are numerous parcels of fruit sent us, either for an opinion on some new variety, or sent for a name, or sometimes as a specimen of what the sender can raise. Of course we are willing to give any aid in our power to those who may ask it, but we must request those who send fruit to observe a few points. Please remember that you send the fruit for your own benefit and not for ours, and it is not proper to put us to any expense in the matter. If you do not think the sending will be worth to you the amount of the express charges, please do not forward it, as we seldom want it enough to pay express rates for it. As to sending by mail: no soft fruit should be sent in this manner; unless packed in a small wooden or tin box, any fruit will be badly bruised. The box-cover must be *tied*, not nailed on, and no paste, gum, or other adhesive material used. The parcel by mail must be so put up that by removing the string the contents can be inspected. Put no writing whatever in the box; if there are specimens of more than one kind, number them. A neglect to observe these particulars subjects the parcel to letter postage, which we have to pay or leave it. When fruit is sent by express or by mail, send a letter relating to it at once, or better the day before. We sometimes have several parcels of fruit waiting for us to know who sent them and what for; after they have decayed and have been thrown away, we get a letter saying, "A week or 10 days ago I sent you, etc." Last summer two parcels received by mail were kept in the ex-

pectation of hearing something about them; when they decayed and were thrown out, the letters relating to them were found at the bottom of the boxes, a place in which we did not think of looking for them, as it is so directly contrary to law that it did not occur to us that any one would do it. It is better to send fruit always by express. Not one parcel in five by mail comes in perfect order. Do not put fruit in cigar-boxes, or other boxes having an odor of their own, or use any odorous material for packing. We have often received grapes packed in kinds of saw-dust, which absolutely ruined them.

Exports of Wheat and Flour.—The gradual growth of our export trade in bread-stuffs is shown by the following figures, which give the value of exports of wheat and flour from 1830 up to last year:

EXPORTS OF WHEAT AND FLOUR FROM THE UNITED STATES.

Yearly av'ge for 10 years	Flour.	Wheat.	Total.
ending 1830....	$ 4,904,308	$ 18,173	$4,922,481
1840....	5,657,960	255,443	5,913,403
1850....	10,043,189	1,564,187	11,607,376
1860 ...	18,014,366	7,502,868	25,517,234
1870....	22,571,364	29,593,869	52,165,233
The year 1871....	24,093,184	45,143,424	69,236,608
1872....	17,955,684	39,915,060	56,870,744
1873....	19,381,664	51,452,254	70,833,918
1874....	29,258,094	101,421,459	130,679,553

The average business for 20 years ending 1840 was about $5,500,000 yearly; for the ten years ending 1860, the average increased to $25,500,000. The continued growth of the business up to the vast total for 1874 of over $130,000,000, or nearly twenty-four times that of less than 40 years ago, shows distinctly that the raising of grain for export has become a staple business which must grow in the future as it has in the past. If the growth during the next 40 years should even approach that of the past 40, some of us may yet live to see a *thousand millions of dollars* worth of wheat and flour exported to foreign countries. At any rate we need not be afraid of raising wheat or corn, nor of enlarging the borders of our agricultural domain. Fortunately there is room enough for it.

A Fine Illustrated Catalogue.—We have received from Messrs. Mallory, Wheeler & Co., of New Haven, Conn., manufacturers of locks, etc., a very elaborate catalogue, which is worthy of a special notice. It is a folio volume of nearly 300 pages, elegantly bound in substantial leather, and contains over 1,000 full size illustrations of locks and knobs of all sorts, and in fact everything pertaining to the securing of a door, from a bank door down to that of a closet. The illustrations are very finely executed in gold and silver bronze, to show the materials of which the locks are made, namely brass and iron or steel. Many of the larger door locks are very complicated in structure, some of them having as many as 600 changes, which will give some idea of their intricate construction. This catalogue, or more properly superb work of art, reflects great credit both upon the manufacturers and the engraver and printer, for the manner in which it is prepared, and the typographical beauty of its general arrangement.

A Twin Dahlia.—The Cascade Nursery Co., Richmond, Ind., send a specimen of a twin Dahlia, in which the flowers, of the variety, W. C. Bryant, are placed back to back upon the same stem. This phenomenon, which is quite common in the cucumber and some other plants, is called *fasciation*, and is due to the growing together of parts that are usually distinct; in this case the two Dahlia stems are more completely blended into one than is commonly seen.

Roses very Much by Mail.—Mr. E. Y. Teas, Pres. of Cascade Nursery Co., Richmond, Ind., where roses are a specialty, in a private note, mentions that in April last they sent roses by mail to Honolulu, Sandwich Islands, and that they arrived safely, and since have grown finely. This is a remarkable instance—and what a blessing to those who live at a great distance—to know that they can get plants in this manner. Mr. T. has carried the war (of roses) into Africa, having sent some to that country, and awaits the result. We hope for their safe arrival, and that, like some of the natives of that land, they may be "stealing and giving odor."

Sowing Grass Seed in the Fall.—"M.," Scotch Plains, N. J. There is no necessity to sow rye with grass seed in the fall, if the rye is not wanted. If the soil is made fine by repeated harrowing, and rich by fertilizing, the seed runs a better chance of taking well if the rye should not be sown. Leached ashes would make an excellent fertilizer for the grass, and nitrate of soda would be a valuable help. We would apply 50 bushels per acre of the ashes as soon as possible after the seed is sown, and would sow the seed without delay. The nitrate of soda should not be applied until spring, when 100 pounds per acre may be sown. If more is used and a dry season occurs, damage may occur. Nitrate of soda may be procured of Geo. E. White & Co., 160 Front st., N. Y.

Malacatune.—"G. C. W." This word is spelled in a variety of ways, all of which are corruptions of *Melocoton*, one of the Spanish names for peach, (*Durazus* being the other). It is written, besides the manner you mention, Melacatune, Malocoton, and Malagatune. It is a handsome large yellow peach with a deep red cheek, and is the parent of Crawford's Early and Crawford's Late. The peaches in the market about Aug. 20th, as "Malacatunes," were no doubt Crawford's Early. The dealers are not very particular about names, and are apt to call any high colored, yellow-fleshed variety a "Malagatune," as that is a popular market name.

Hollow Celery.—"W. F.," of Southbridge, Mass., inquires why his celery grows hollow or pipey, and as Mr. Peter Henderson knows more about celery than most people, the question was referred to him. He says: "It is in all probability in consequence of having got some tall-growing poor variety. We have never seen the dwarf varieties become hollow. The quality of the soil has something to do with it. On one occasion we planted the 'Giant Solid' celery on three different soils, stiff clay, sandy loam, and muck; on the first it was entirely solid, on the second partially hollow, while on the muck it was so pipey as almost to be useless, and yet all was from the same bag of seed sown and planted at the same time. Angle worms can best be destroyed by incorporating lime well with the soil."

Tuberoses in Winter.—"I. S.," Oil City, Pa., asks what time during the winter Tuberoses, that were planted from sets in June and potted now, will flower if kept in a night temperature of 60° or 65°. Peter Henderson replies: "In our experience we find that Tuberoses so treated will not flower much before April. If the temperature at night in winter could be increased to 75°, they might then bloom in February, but not before. One of our New York florists, with a view to overcome the difficulty that all have experienced in getting these flowers at the holidays, has had a large number grown in the extreme southern states, thereby getting the new crop of bulbs ripened sufficiently to plant in September. By this method it is expected that flowers can be had in December and January. The experiment has not been completed, but will be the coming winter, and if successful, the system will be detailed at length."

Killed by a Piece of Wire.—The death of a noted and valuable cow of the herd recently sold by Col. L. G. Morris, to Messrs. Avery & Murphy, of Michigan, occurred a short time ago. The cause of death was a piece of wire, six inches long, such as is used to bale hay, penetrating the heart. She was the Twelfth Maid of Oxford, a highly bred Short-Horn. The wire must have been swallowed with the food, and have penetrated the coats of the stomach, passed into the chest and into the substance of the heart. Such accidents are by no means rare, and they prove very clearly the easy possibility of the penetration of parasitic animals to any part of the body, the lungs, heart, liver, brain, or muscles; if they once gain access to the stomach along with the food.

Roofing Felt for Stacks.—"W. B.," Marion Co., Ohio. Roofing felt would not be strong enough to use as a cover for hay-stacks. It would be far the cheapest to provide roofs such as are described on page 381, than to use any kind of cloth or felt covering, as these would last for 20 years or more, while waterproof sheets would be worn out in four or five years, and cost nearly as much as the sheds. For temporary coverings a sail or tent cloth may be used to turn the rain until the stack can be secured permanently.

Wire for Mending Harness.—"W. L. W.," Pittsburg. The wire used for mending harness, as described heretofore in the *Agriculturist*, is No. 16 copper wire. It can be purchased at any hardware store for about 20 cents per 100 feet.

Is Hungarian Grass Hurtful?—"J. C. B.," Tarrant Co., Texas. When Hungarian grass is allowed to ripen before it is cut, it sometimes causes irritation to the kidneys of horses, to which the hay is fed. The seed is surrounded by small stiff barbed bristles, and these have been known to form a kind of felted ball in the stomach and intestines, and death is said to have been caused by them. The crop should be cut when in blossom if it is to be made into hay and used for feeding horses, though in many cases no ill effects are experienced from its use when cut at maturity.

Seeding with Orchard Grass.—"E. N. C.," Beloit, Wis. One bushel of orchard grass is not enough seed for an acre of ground. Two bushels at least should be used. Perhaps as good a way as any would be to wait until spring and sow 4 quarts of clover with half a bushel more orchard grass, harrowing the surface lightly before sowing the seed.

To Remove or Prevent Rust.—"E. T. P.," Suffolk Co., N. Y. Rust may be removed from tools or steel or iron implements, by rubbing with a mixture of emery powder and sweet oil, and a woolen cloth. To prevent rusting, the tools should be heated until the hand can not bear to touch them, and then rubbed with white wax or paraffine. They are then exposed to the heat again until the wax is all absorbed, and finally rubbed with a piece of flannel. Iron implements, as plows, are preserved from rust by covering them with a coat of thick lime wash.

To Prevent a Horse from Rolling in the Stall.—"J. F. S.," New Canaan, Conn., advises that a strap or rope be fastened to the roof or ceiling of the stall where the horse's head will be when he lies down, and reaching only to within two feet of the ground. A snap should be attached to the end of the rope, which is to be fastened into the ring of the halter. When the horse lies down, he can not bring his head to the floor, and consequently can not roll over. This plan has cured a horse which was addicted to this habit.

Basket Items continued on page 397.

The Ruffed Grouse—Grouse, Partridge, or Pheasant.

The engraving upon the first page represents a scene of which the reality may be witnessed in many parts of the country, during the present month; the bird itself will be at once recognized, and at the head of this article are given the names by which it is known in different parts of the country. Its scientific name is *Bonasa umbellus*, and ornithologists have fixed upon Ruffed Grouse as the correct common name, claiming that it is not a Partridge, as it is usually called in New England and the middle states, nor do they regard the term Pheasant, given it in the southern states, as any more appropriate. The bird has a wide range, and in some of its varieties is found quite across to the Pacific, and from Maine to Mexico. It is not a migratory bird, but winters in the northern states in thickets, and is said to have the peculiar habit of burying itself in deep snow to pass the cold nights; if a rain comes on followed by freezing, great numbers perish in their icy covering. They feed upon various kinds of berries, and other wild fruits, seeds, and insects, and in a time of great scarcity, eat the buds of trees, mosses, the leaves of various evergreens, including those of the common Laurel, (*Kalmia*); the laurel-leaves are generally thought to communicate a poisonous quality to the flesh of the birds which eat them; but Mr. C. H. Hinkle, who engraved the picture, and is an authority in sporting matters, informs us that he has eaten birds the crops of which were full of laurel-leaves, without any inconvenience, and is of opinion that the alleged poisoning cases were due to leaving the birds undrawn for too long a time. The bird, in May, makes a very simple nest of dried leaves, at the foot of a tree, or near some old logs, where 10 to 12 eggs of a dull-brown color are laid. The grouse are a favorite game with sportsmen, but the novice finds it a difficult bird to shoot; it rises with a great whirr, and unless one has his nerves under control, his hurried shot is quite as likely to miss as to hit. The true sportsman will only shoot the bird while on the wing, but the "pot-hunters," as those who hunt for market are called, are in search of birds, and not of sport, and care little by what means they get them. Sometimes curs are trained to tree the birds, when they are shot down in a most unsportsman-like manner; their number is also greatly reduced by trapping and snaring, and they are by these destructive methods quite exterminated, or driven away from localities where they were formerly found very abundant.

In Favor of Rifle Clubs.

We are pleased with the general interest now manifested in rifle shooting, and for several reasons. First, on public considerations. Our Country has always depended upon its citizens for defense. Our Independence was achieved by the militia men, whose sure aim was too much for the disciplined, but poor shooting armies of a powerful kingdom. In Europe immense standing armies are maintained at an expense that crushes the people. Here are a few figures showing what it costs to sustain their armaments in *time of peace*, and how vast a number of men are withdrawn from productive labor. The first column includes the regularly enrolled soldiers, though a considerable number of these are partly engaged in other occupations in time of peace:

	Men Enrolled.	*Annual Cost (gold), in Time of Peace.*
France	1,700,000	$133,000,000
Germany	1,700,000	100,000,000
Russia	1,550,000	136,000,000
Italy	760,000	49,200,000
Great Britain	535,000	124,000,000
Austria	535,000	54,000,000
Turkey	300,000	28,000,000
Spain	270,000	32,000,000
Switzerland	180,000	1,800,000
Sweden	160,000	5,600,000
Holland	100,000	5,600,000
Portugal	78,000	1,000,000
Denmark	54,000	1,830,000
Greece	51,000	1,800,000
Belgium	43,000	8,296,000
Total	**8,011,000**	**$682,126,000**

In this country we average about 25,000 men in the regular army, and half of these could be readily dispensed with, were it not for our peculiar situation in reference to the Aboriginees, who must be guarded, as well as guarded against, 10,000 Regulars would suffice to picket the fortifications and protect them from decay, and supply a small national police. We have no occasion for an offensive war, and need have little fear of a defensive one. We can well depend upon our citizens in case of an unjust war forced upon us. From the battles of Concord, Lexington, and Bunker Hill, to now, the citizens trained to use the rifle skillfully against wild animals, have been powerful adversaries in battle. Many illustrations of this were seen in the late domestic conflict. The western and southern men were a match, one to three, against those from the older eastern states, where the rifle had nearly gone into disuse. We have seen some of these contests, and from the nature of the case, we would prefer to go into battle with 2,000 men who could each pick off his enemy at a fourth to half a mile, than to be one of 10,000 such shooters as formed the bulk of recruits from the eastern half of the United States in 1861-65.

With occasional practice in a local rifle club, a large majority of the members acquire skill, steadiness, and confidence, so that at a distance of 300 yards or 1/6 of a mile, they can strike a foot target off-hand with every second shot at least, and a 30 to 40-inch target at half a mile or more. Now suppose that in 20,000 of our towns we have 25 such marksmen among the young and middle-aged men. This would supply a powerful, effective reserve of half a million, equal for defense to two or three millions of such men as have usually made up the standing armies of Europe. With such a force, with educated officers to train and direct them if occasion required, no other nation would be likely to molest us under any slight provocation. As every regiment of regulars costs us about $1,000,000 a year, our General Government could well afford to cut its army down still more, and appropriate four or five millions, if need be, to encouraging the formation of rifle clubs, supplying them weapons for practice, and instructors, when needed. So much for a national view of the subject.

This is the day of athletic and other field sports, ball-playing, boating, etc., and, we are sorry to say, of horse-racing. Most young men would take more pleasure in sending a rifle-ball straight to the distant "bull's eye" than in any other amusement. The walk to the rifle range, and the individual participation in the shooting, would furnish better and higher toned exercise than going to the race-course. Rifle-shooting can be participated in by a much larger number than can indulge in boating. The latter exercise, as well as ball-playing, is frequently of a violent character, while in the ball-field the chief participants are a few "picked nines." In the well-organized rifle-clubs there is really less danger to limb, and to life even, than in the ball-field, as it is now conducted with the lead-like "regulation balls and bats." There is not a little thought and science cultivated in the use of the target rifles, as now made, including the calculations for distances, variation by winds, state of the atmosphere, etc. We suspect the students at colleges would *as a whole* get more and better exercise and amusement, and suffer less in morals, if rifle-clubs should take the place of the rowing-club, and of "college nines" of the ball-field. [For some notes on target rifles, see Supplement to this paper].

A Farm House Costing $2,800.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a convenient and comfortable Farm-house in the American style, comprehending the most economical and practical methods of construction. The size, and shape of such houses should be made to conform to the requirements of those who are to occupy them. Unlike the villager, the farmer has ample road front, and his house should be so arranged as to secure the most pleasant outlook from the living rooms.

Fig. 1.—FRONT ELEVATION OF FARM HOUSE.

Exterior, (figure 1.)—Farm-houses usually stand disconnected and apart from other buildings, and should have outlines that will best adapt them to the conditions that are otherwise manifest in the location. This plan is intended for an eastern frontage, where it would face the morning sun, when the principal and broader portions of the building, at the right, would be doubly valuable as a shield to ward off the northern winds from the parts of the house most used by the occupants. (By reversing the plan it would be equally adapted to the opposite, or easterly side of a road.) It is intended that the body of the house shall be set at least two feet above the ground, this gives opportunity for good sized cellar windows, that will admit light, and afford good openings for cellar ventilation, and also secure the framework of the building against moisture from the ground. Such moisture, if allowed, will cause decay of the sills, and other principal timbers, and is sure to percolate upward into the house, filling it with unwholesome vapors. The variety of the general outlines as shown in the Elevation are calculated to impart a cheerful and lively appearance always desirable in a country home, and very pleasant to the passer-by. The ridged roofs, with their spreading gables, and ample projections, are features of frankness in which there is no attempt at concealment or imitation. The Bay-Windows, wide Entrance, and spacious Piazza, are each expressive of liberality and refinement. The extreme simplicity of the details, and methods of construction, devoid of all ostentatious display, clearly express the purpose of the building, and commend it to the consideration of all who are interested in rural house building....

Foundation, (fig. 2.)—In most locations stone are abundant, our estimate comprehends the building of the foundation walls of rough broken stone laid in coarse mortar, and neatly pointed where exposed to sight. Any man who is at all familiar with the most ordinary stone-work, such as building "wall" fences, could build these foundations acceptibly; they should be laid up 18 inches thick, and flush with the outside of the frame-work of the building. Our plan shows a cellar under the central part of the building only, which should be 7 feet deep; this cellar will be found sufficiently large for the uses of most families, but may be enlarged if desirable. [One of the "wise sayings" we heard in youth, was, "always build your cellar under the whole house." Unless there are ample cellars under the barns, the house-cellar is never too large. In this case, it will be but little extra cost and labor, to carry the foundations down, and take out the earth. The walls provided would do most of this, and then we have ample cellars for all wants, and have room to partition off fruit and vegetable rooms, the former of which need to be much cooler than the latter, if one would keep fruit well.—ED.] The side walls of the *Area* are built of the same materials as the cellar walls, with the stone steps inserted while building. The foundations shown on the plan where no cellar is required, are built of the same materials, laid in trenches, which have been excavated 18 inches wide, and 2 feet deep. The chimney foundations should be started, and laid up with the other walls. A very effectual ventilation may be provided from the cellar by arranging an opening that shall lead to the left-hand flue of the kitchen chimney; this flue will be warmed by contact with the range when in use, and a strong draft will be made, which will exhaust the damp foul odors so common in deep cellars. It will be observed that the cellar is protected from the extreme changes of outward temperature by the walls and spaces at each side, and

by the partial coverings in front and rear.... **First Story,** (fig. 3.)—This story is divided into 3 large and 3 small rooms, and hall. By this plan the Kitchen is intended as the Living-room of the family, and is so arranged as to be the most *convenient and pleasant room in the house*—has large windows front and rear, which will admit an abundance of light, and afford an outlook each way. A large Range is placed in the fire-place, with a water-back connecting with the boiler in the laundry. The clock and lamp-shelf is placed on the opposite side of the room from the fire-place; *should never be over it.* Adjoining the kitchen, and connected with it, is a Pantry, containing shelving, drawers, and a wash-tray, with cold and hot water. The Laundry, or *work room*, is arranged to connect directly with the kitchen and pantry, and leads to the rear outside door. This room is fitted up so that the principal kitchen work may be done in it, with great facility, and with few steps, and contains a closet, sink, pump, wash-tubs, tank, and boiler. The hight of the ceiling in this room is 10 feet in the clear. The Tank, (not shown in the drawings,) is situated close up to the ceiling, above the pantry door, is 8 feet long, 3 feet wide, and 2 feet deep. The Boiler is of copper, 40-gallon capacity, and is placed directly in the rear of the kitchen chimney. The Sink, and wash-tubs, are shown on the plan, and are to be provided with cold and hot water. The force-pump is placed next to the sink, under the tank—by this method but little plumbing is required, and a very perfect and satisfactory arrangement is secured. The boiler keeps the temperature of this room sufficiently warm to prevent damage to the pipes from frost. The Bed-room also adjoins the kitchen, and has a closet for clothing, and two windows. The principal Hall included in the central building, is entered through large double doors from the front piazza, and connects through doors with the parlor, kitchen, and back passage, and contains the principal stairs, which are of easy "platform" construction. The Parlor has a large bay-window, marble mantel, and adjoins the library through large sliding doors. The Library has a marble mantel, and closet, and connects with the back passage at the rear of the principal stairs. The front piazza has its ends sheltered by the projections at each end, and is arranged to require but two columns. If desirable at any time, a part of this piazza can be enclosed with sash at very little expense, which would provide a very convenient conservatory for plants and flowers. The rear "shed" is provided with a roof, and columns, but has no wooden floor. It is intended that the grounds around the rear of the central building shall be graded well up, say within a foot of the rear door sills, so as to require but a single step, or large flat stone, to each door. The outside cellar doors would be made to lay even with the final grade, and hung to the coping stones of the area walls, and the remaining space paved or flagged with stone. When once properly done, the finish of this character will last a lifetime without trouble, while woodwork could never be satisfactory, and would often require renewal. Whenever the cellar doors are opened, they are hooked up against the columns, where they form a railing, or guard, to prevent the usual danger of an open hatchway.... The **Second Story,** (fig. 4,) has a hall, 4 large, and 3 small chambers, with 4 closets, and stairway leading to the attic. Each of the large chambers has two windows, and a ventilating register in the flue of the chimney adjoining. All these rooms have full hight ceilings, and are not so close to the roof as to be affected by their absorbed heat of summer, but have complete square ceilings, with large air spaces between them and the roofs. The *Attic* of the principal building is completely floored, and has windows in each gable or pediment, and may be used for storage, drying clothes in stormy weather, and for many other purposes.... **Construction.**—The estimate appended indicates the kind and quantity of materials used, which will be found to be such as are now most generally adopted for buildings of this character. The work is very simple, and may be executed by the simplest methods. Information concerning the application and uses of the "felting" may be found on page 89 (March *American Agriculturist*), and other information concerning buildings of a similar character, in the succeeding numbers. In the May No., page 173, we suggested that "there are circumstances that would justify the building of one part of a house first." Should it be desirable, the central portion of this house could be built first, and would be found quite sufficient as the dwelling of a small family.... **Estimate.**—The following estimate has been carefully compiled, and may be relied on for quantities, etc. Prices are somewhat lower now, but the figures here given form a good basis of calculation:

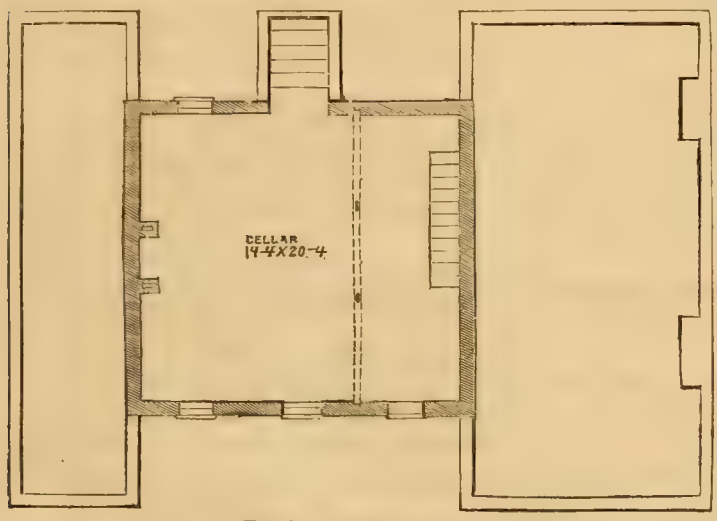


Fig. 2.—PLAN OF CELLAR.

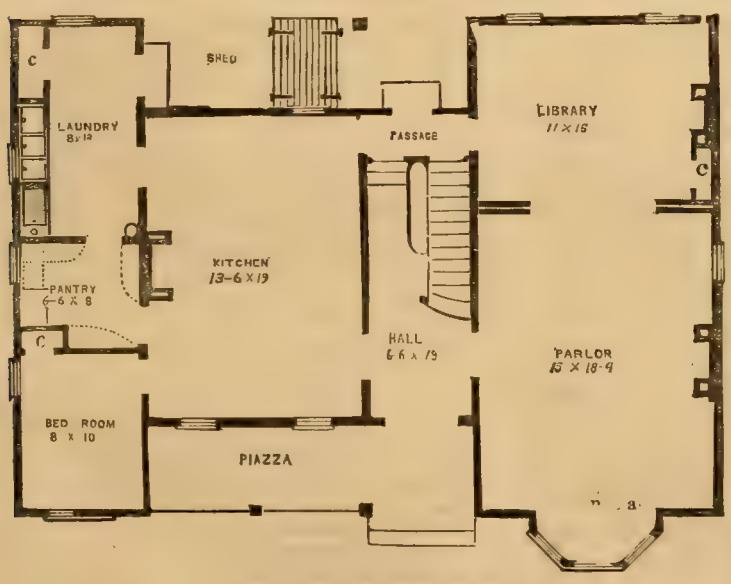


Fig. 3.—PLAN OF FIRST STORY.

65 yards Excavation, @ 25c. per yard	$6.25
887 feet Foundation, @ 15c. per foot	132.30
725 " " @ 10c. per foot	72.50
6,000 brick in Chimneys, @ $15 ⅌ 1000	90.00
40 feet Stone Steps and Coping, @ 30c. per foot	12.00
500 yards Lath and Plastering, @ 35c. per yard	315.00
4,799 feet Timber, @ 2¼c. per foot	107.97
viz. Sills, 4x8 in. x21 ft. long. 45 Beams, 3x8 in. x16 ft. l'g.	
1 Girt, 1x8 in. x30 ft. long. 22 " 3x8 in. x22 ft. l'g.	
7 Posts, 4x7 in. x24 ft. long. 15 " 3x7 in. x 9 ft. l'g.	
2 Posts, 4x7 in. x18 ft. long. 4 Valleys, 3x8 in. x20 ft. l'g.	
Ties and Plates, 4x6 in., 354 ft. long.	
500 Wall Strips, 2x4 inches x13 feet long, @ 16c. each	80.00
340 Novelty Siding Boards, 9½ in. wide, @ 38c. each	129.20
150 lbs. Tarred Felting, @ 5c. ⅌ lb.	7.50
500 Matched Flooring Boards, 9½ in. wide, @ 35c. each	105.00
20 Rough Spruce Plank, @ 25c. each	5.00
270 Shingling Lath, @ 6c. each	16.20
48 bunches Shingles, @ $2 each	96.00
75 Hemlock Boards, 10-inch, @ 20c. each	15.00
7 Squares of Tin, @ $9 per square	63.00
Materials in Cornices and Outside Casings	60.00
33 Narrow Pine Flooring for front Piazza, @ 25c. each	8.25
67 Narrow Pine Ceiling, @ 25c. each	16.75
1 Bay Window complete	75.00
26 plain Windows complete, @ $12 each	312.00
4 Cellar Windows, complete, @ $6 each	24.00
30 Doors, complete, @ $10 each	300.00
Stairs, comp'e, $70.00; 8 Closets (fitted comp'e) $40,00	111.00
2 Marble and 2 Pine Mantels	50.00
Nails, $20.00; Range with Elevated Oven, $80.00	100.00
Plumbing, $84.00; Cartage, average one mile, $27.08	111.08
Carpenter's Labor, not included above	250.00
Painting	120.00
Total cost, complete	$2,800.00

Science Applied to Farming.—X.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

Waste and Saving with Potatoes and Roots—More Feeding Experiments.

A Correspondent, referring to the experiments described last month, asks, "Are we to conclude that potatoes are unprofitable as food for stock?" By no means, if they are rightly fed. It is a matter of common experience that stock are healthier, and cows give more milk with potatoes or roots and hay, than with dry hay alone. But, at the same time, there is apt to be a real loss of hay, unless some nitrogenous food, like oil-cake, malt-sprouts, beans, peas, or bran, are mixed with the potatoes or roots. There is loss of hay because *less of it is digested and utilized as food.* The rest, that would be digested in right feeding, is passed off as excrement, and is useful only for manure.

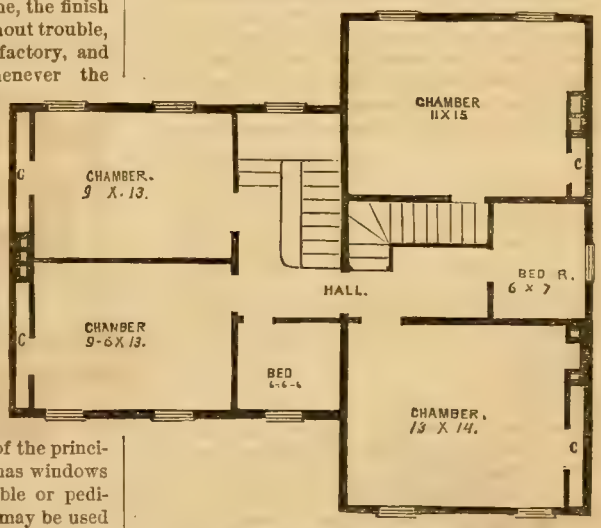


Fig. 4.—PLAN OF SECOND STORY.

The case is simply this: If the mixed food contains too little nitrogen (albuminoids), and too much starch, sugar, or other carbo-hydrates, the animals cannot digest it completely. Only the best qualities of hay furnish as much nitrogen as is *needed* by working cattle or milch cows. Potatoes contain very little nitrogen, and a great deal of starch. So sugar-beets are poor in albuminoids, and rich in sugar, and sugar, like starch, is entirely a carbo-hydrate. Mix considerable of these with hay, straw, corn-stalks, or even clover, and the ration will still lack nitrogen, and there will be loss of valuable food material. But if nitrogenous food be added, at the

same time, so that the whole ration may contain the proper proportions of albuminoids *and* carbo-hydrates, the animals will digest all its digestible material, and there will be no loss. This matter is so important that I will illustrate it by some

More Feeding Experiments.

Some years ago, a German chemist, Grouven, fed oxen for a time upon straw, giving them what he styled a "hunger-ration," though in fact it might almost be called a starvation-ration, for there was just enough of the straw to keep the animals from starving. He then added, in successive trials, quite small quantities of sugar, starch, and other non-nitrogenous materials, determining in each case just how much was digested. And though with starch or sugar and straw together, the oxen had little more than enough to sustain life, yet they digested less from the straw, than when nothing was added to it.

It is a very interesting fact, that of the different kinds of coarse foods,—as clover, hay, straw, cornstalks,—those which are richest in nitrogen, suffer the least loss when mixed with non-nitrogenous foods. This principle is very plainly set forth in some experiments by Wolff. Four sheep (two-year-old wethers) of 100 to 105 lbs. weight each, were used. As coarse food they received aftermath, ("rowen"), and Vetch hay, and as concentrated food, sugar-beets. The vetch, it may be said, is a leguminous plant, like the bean, or clover. The stalk, or hay, is rich in nitrogen, and is highly valued in Europe as food for cattle. The sheep were fed for a period with aftermath hay, or vetch hay alone. Then, during a second period, a small amount of sugar-beets was added. During a third, a larger amount of beets was given, and during a fourth, still more, while during a fifth period the beets were omitted, and the hay fed alone once more. The result was that whenever beets were used, less of the coarse food was digested. The loss increased with the amount of beets, and was greater with the aftermath than with the vetch hay, as appears from the table below:

Table 17.

Each Sheep Received as Food per Day about as Below.		*The addition of Beets caused loss (less digestion) in each ingredient of hay, as in figures below.*			
		Albuminoids.	*Crude fiber.*	*Other Carbo-hydrates*	*Fats.*
	A	*p'rcent*	*p'rcent*	*p'rcent*	*p'rcent*
Vetch Hay.	*Sugar Beets.*	*of loss.*	*of loss.*	*of loss.*	*of loss.*
I. 2¼ lbs.	None.	0	0	0	0
II. 2¼ lbs.	1½ lbs.	1.2	6.3	0	2.2
III. 2¼ lbs	3¼ lbs	2.5	6.3	1.4	6.6
IV. 2¼ lbs.	4¾ lbs.	6.8	8.5	0	12.4
	B				
Aftermath.	*Sugar Beets.*				
I. 2¼ lbs.	None.	0	0	0	0
II. 2¼ lbs.	1½ lbs.	2.4	1.3	2.3	1.9
III. 2¼ lbs.	3¼ lbs.	6.7	6.0	3.6	1.3
IV. 2¼ lbs.	4¾ lbs.	14.4	7.3	7.9	12.8

It is easy to see that in each column of figures the numbers increase downward, which shows that as more beets were fed, more of the material of the hay passed off undigested, and was lost as food.

It will be well worth our while to study these figures closely. In trial B, IV, for instance, in the column of albuminoids, opposite the 4¾ lbs. beets, is the number 14.4. This means that of every 100 parts of albuminoids in the 2¼ lbs. of hay, 14.4 parts less were digested, with the 4¾ lbs. of beets, than when the hay was fed by itself. From the detail figures, (not given above), in the description of the experiments, it appears that the aftermath hay contained 14.26 per cent of albuminoids, that is, 100 lbs. of hay contained 14¼ lbs. In the experiments with hay alone, the sheep digested on an average 64 per cent of this 14¼ lbs. With the 4¾ lbs. of beets, they digested only 49.6 per cent, (64—49.6=14.4), so, 14.4 per cent of the albuminoids of the hay was lost. To put it in another way; of every 100 lbs. of albuminoids contained in the hay, the sheep could digest and use 64 lbs., but with the beets they digested only 49⅗ lbs. In short, from 64 lbs. of digestible albuminoids in the hay, 14⅖ lbs., or between ¼ and ⅕ was lost by adding the beets.

It should be remembered, that by loss here is to be understood loss as food, and not as manure. So far as the carbo-hydrates, fiber, and fat are concerned, the waste is practically total, as these contain no nitrogen, and have very little fertilizing value.

What is to be Done with Potatoes and Roots.

It seems from the experiments described, that if we feed any considerable quantities of these with clover, there will be some loss, with the better qualities of hay more, while with poor hay, straw, and cornstalks, the case will be still worse, for they contain very little nitrogen. It would be very wrong, however, to give up the use of roots on this ground. The proper course is rather to use them so as to get all the benefit that can come from their use, and have little or no waste. This can be done. Indeed it is done continually. The method has been repeatedly pointed out, to wit: *Use potatoes, beets, or other roots, with hay, straw, or other coarse fodder; but at the same feed oil-cake, bran, bean-meal, or malt sprouts, etc., each one of which contains considerable albuminoids, and each will add needed food elements, and enable the animal to digest and use a much larger part of the coarser hay, straw, etc.*

I should be glad, if there were space, to describe experiments in which it is most conclusively shown that when rich nitrogenous and non-nitrogenous foods together, are mixed with hay and coarse foods, the latter suffer little or no loss in digestion. A great many feeding trials have been made in the German Stations, to determine in what proportions different food materials may be mixed to secure economy in feeding. The fodder tables in previous articles are based on these. And, so soon as we shall have prepared the reader by study of the principles upon which they are founded, to understand and rationally use them, I hope to give a considerable number more.

LATE PASTURING MEADOWS.—As a general rule it is better to avoid pasturing meadows, after the growth has ceased for the season. But there are exceptions to this rule, there being some cases in which we would pasture as closely as possible. Where the soil is rich, and the aftermath heavy, there may be a mass of dried dead stuff in the bottom next year, which will interfere much with the mowing, unless it is pastured down now. In this case we would pasture the meadow closely, and give some top-dressing, if necessary, taking care to spread the droppings of the stock evenly. Again, strong but thin clover and grass meadows will be benefited by close pasturing, by which the stubble will be eaten off, the coarse growth rendered finer and closer, and the yield of next season be improved in quality. A moderate top-dressing of fine manure will be of more value than all the stubbly aftermath.

Ogden Farm Papers.—No. 68.

BY GEORGE E. WARING, JR.,

It is a very simple calculation for any farmer to make to decide the comparative profit of a crop of 15 tons to 10 acres, and of one of 30 tons to the same area. To secure the latter return by any ordinary process of American farming is both difficult and costly. It is evident, however, from the experience of many parts of Europe, that such crops may be obtained by the aid of well-managed irrigation; and there seems to be no good reason why this valuable agent of fertility may not be as well applied here. Any farmer who has observed the effect upon grass of an occasional natural overflow from a brook or river, will readily accept the testimony of those who assert the profitableness of the systematic flooding of grass lands by artificial means. It is not easy to see why a system which has from time immemorial been so successfully used in so many parts of the world, has thus far failed of anything like a regular introduction into American farming; it must be because its processes and results are not understood, and it seems worth while to describe them here with some care.

The great effect of irrigation is due chiefly to the water itself, and pure spring water made to flow over the land at proper times and in a proper manner, produces astonishing effects. The more foul the water is with either organic or earthy matters, the more good will it do, because in addition to its own effect in dissolving the plant-feeding matters of the soil, it deposits in its slow course any impurities that it may contain; therefore, a muddy stream is better than a clear one, and a stream that receives the drainage of barn-yards is better than one flowing clear from the hills. An ordinary brook, having its source in wooded uplands and among pastures where cattle drop manure, is especially valuable.

The water supply for irrigation will be sometimes from a running brook which, at least during the irrigating season, (spring and fall), will have a sufficient flow; and sometimes from the storage of rain-water floods, held back by artificial dams with gates for letting on and shutting off the flow at pleasure. While the natural supply is available in a vast number of cases, there are many others where artificial storage must be resorted to, but this is so simple and, compared with the results to be gained, so inexpensive, that no one need be deterred from making the improvement who has tolerable conveniences for storing the water of heavy rains.

The following directions will be confined to the use of brook water, where there is a constant supply without artificial storage. The modifications necessary for an artificial supply will suggest themselves. If the brook delivers directly upon the highest part of the land to be irrigated, some trouble and engineering will be saved; if the water has to be led to a distance before beginning its work, it should usually be carried in a nearly horizontal gutter running along the side of the hill after the manner of a mill-race; and it should always be led into the irrigation field at a low velocity; if the brook approaches the field with a rapid slope, it should empty into a small pond or basin to check the flow. Wherever convenient, the main course of the stream should be led outside of the field, lest in time of floods it should wash away or disturb the irrigation gutters. It is desirable to keep these always intact, and to have them grassed to their very bottoms, so that they may retain their form and relative depths. The time during which it will be necessary to have water flowing through them, will not be long enough to injure the grass.

In the preparation of ground for irrigation, the first desideratum is to secure proper drainage, (either by surface gutters or under-drains), for any parts that are inclined to retain water. After this the conformation of the land must be studied, and it must be so laid out with leading gutters and catch water-drains that the irrigating flow may be spread evenly over the surface, and finally withdrawn to a suitable outlet. In this view all fields may be regarded as belonging to one or more of these three classes: 1st. Those having irregular slopes. 2nd. Those having a uniform slope in one direction. 3rd. Those which are quite level. All three of these conditions will sometimes be combined in the same field.

1st. Where the inclination is irregular, the arrangement will have to depend, of course, upon the conformation of the surface, but the accompanying illustration, fig. 1, will indicate how such cases are to be treated. The field is supposed to contain 10 acres. The land slopes in the direction of the shading lines; the dotted lines are lines of equal elevation, the dotted line 5 5, for instance, shows where a horizontal plane at an elevation of 5 feet above the outlet would intersect the surface of the ground; 10, 10, indicates the intersection of a plane 10 feet above the outlet. And in like manner the levels are indicated up to 30 feet. *B, B,* is the main irrigating channel, (either natural or artificial). The lines of equal elevation having been staked out on the ground by the aid of a surveyor's level, the irrigating gutters should be located on or near to these lines. They should be only so deep as may be necessary to carry a stream deep enough to flow smoothly, (8 inches will be enough). Having been made as accurately as they can be with a spirit level, they may still need a little correction after the water is let on, by raising or reducing their banks slightly. In the field in question there are five pairs of these gutters, 1. 1^1, 2. 2^1, 3. 3^1, 4. 4^1, 5. 5^1. At the lower edge of the field two drains, (0.0^1), should be arranged to collect the effluent water and return it to the main channel. If the flow of water is sufficient to run in a thin film over

the whole length of the bank, all the better, if not, it will have to be let out little by little, through temporary notches in the bank, one set being closed and another opened consecutively as one strip after another has been sufficiently watered. In a field of this character, especially where there is an abundant supply of water, it is best to begin the irriga-

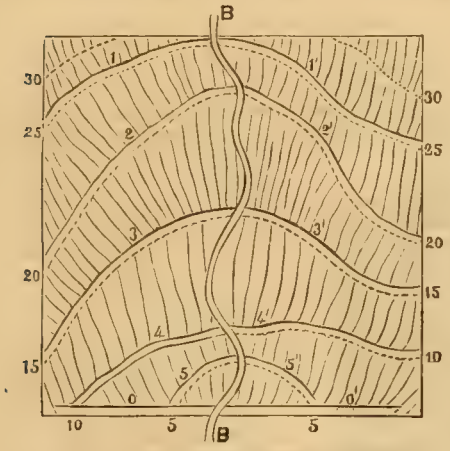


Fig. 1.—FIELD WITH IRREGULAR SLOPE.

tion with the highest gutter; and indeed, if there is water enough, the whole field may be irrigated from this point, each subsequent gutter arresting and concentrating the diffused flow of the one above it, and starting it again in a uniform sheet. The whole will finally be collected and withdrawn by the outlet drain. Where the amount of water at command is slight, and more care is needed in its distribution, it may be well to begin with the lower pair of gutters and, in whatever way the work is done, it will usually be best to irrigate only one side of the field at a time, concentrating the whole flow in one volume. The direction of the water in the ditches may be most easily changed by the use of several hand-dams made of iron about $^1/_{16}$ inch thick, and formed as shown in fig. 2. This dam must be large enough to close the channel entirely. Placing one dam in the main channel below the lowest gutter, and another at the entrance of gutter 5', the whole flow will be thrown into gutter 5; when the area reached by this gutter is thoroughly watered, by moving the dam to its entrance, the flow will be turned into 5'. By moving the dam in the main channel to a point just below the next pair of gutters, the water will be turned into these, and so on until the field is finished. These portable dams will bring any part of the system under perfect control.

2nd. Fig. 3 shows the arrangement for a field having a uniform slope from N. to S. In this case the lateral gutters are to be managed as directed for the preceding case, but as the slope is uniform, they will be straight. The water after having completed the irrigation, is carried to the outlet by the drains *d*, *d*. In this case, as in the other, the whole field, or the whole of each side may be flooded from the highest gutter, or it may be flooded little by little, according to the amount of water at command.

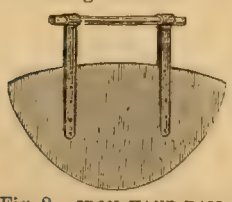


Fig. 2.—IRON HAND-DAM.

3rd. Fig. 4 shows the arrangement for a perfectly level field. Here the expense of preparation will be greater, but still not beyond what the result will amply justify. The whole area must be thrown into "lands," or ridges, say about 20 yds. wide, each land having its crest at the positions of the black lines numbered from 1 to 10, with valleys between them as represented by the dotted lines. Nearly the whole of this work of grading can be done with the plow, back furrows being turned for the crests of the lands, and the dead furrows being in the valleys. For lands 20 yards wide the difference in elevation between crest and the valley should be about 18 inches. After sufficient earth has been thrown to the ridges to make the necessary difference of elevation, a certain amount of hand-work will be necessary to give uniformity to the slope. After this, the whole field should be seeded down to grass and allowed to form a good sod. Then the irrigating gutters and outlet drains should be formed on the crests and in the valleys, the sods being laid carefully aside and the small amount of earth excavated, spread where it will fill any irregularities of surface that may be left. Then the sods should be returned to the gutters and drains and allowed sufficient time to take a good hold on the soil before the water is let in. This preparation may take two seasons, but it is to be considered that an irrigated meadow need never be broken up, so that the work now done is done for all time.

If there is enough water to maintain its fertility, it will continue productive for generations. The "section" at the left-hand side of fig. 4 shows in an exaggerated form, the manner in which the slopes, gutters, and drains are arranged. On level land the water may be admitted and withdrawn at any point, and I have arranged for it to enter at one corner, the channel of supply passing across one side of the field, and escaping at the corner diagonally opposite through a drain lying opposite to the inlet channel. The inlet channel must be on a ridge a trifle higher than the crests of the lands, communicating at each of these by an opening into its gutters, unless the amount of water available is ample to make a perceptible flow over the whole area at once, it should be admitted to only one or more of the lands at a time. This question is to be decided by the capacity of the stream, which must be sufficient to overflow the gutters with considerable rapidity, so that too much of the water will not be lost by infiltration. Irrigation by this plan is quite

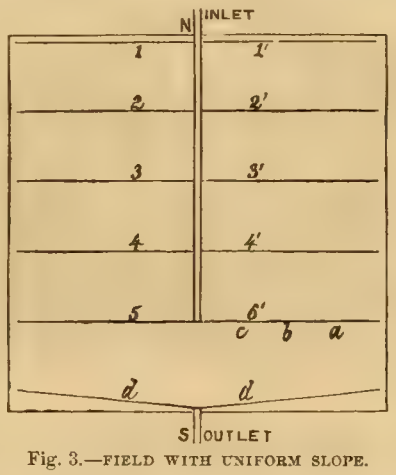


Fig. 3.—FIELD WITH UNIFORM SLOPE.

rapid, as the water has only to run about 30 feet before it reaches the drain by which it is carried off.

The foregoing plans assume that the quantity of water available is enough for the complete irrigation of all the land reached by a single gutter. If it is not enough for this, it will not effect the profitable irrigation of level ground under the system shown in fig. 4; but it may still be made to answer a good purpose on all ground having an inclined surface, either by the use of the occasional outlets described above, or by laying the gutters not level, but with slight inclination, say ½ inch in 100 feet. Such inclined gutters will tend of course to carry the flow to their extreme ends, overflowing say the last 50 feet, (more or less), of their length. When the ground reached by this overflow has been sufficiently watered, by striking in a dam 50 feet above the end of the gutter, a further section will be watered, and so the whole field may be reached successively.

The application of irrigation water should not take place as a rule when the grass is large. Copious waterings at frequent intervals throughout the autumn are beneficial, and if the intervals are long enough for a complete draining and aëration of the soil, the watering can hardly be too frequent in the spring of the year, say until the crop is a third grown. Then, unless the grass is visibly suffering from severe drouth, the water should be kept entirely off until after mowing. After this, during hot weather, light irrigations at night and in cloudy weather will be beneficial, and if judiciously managed, may be made to produce a good second cutting.

Irrigated fields may be pastured by cattle or sheep, (preferably the latter), but only when the

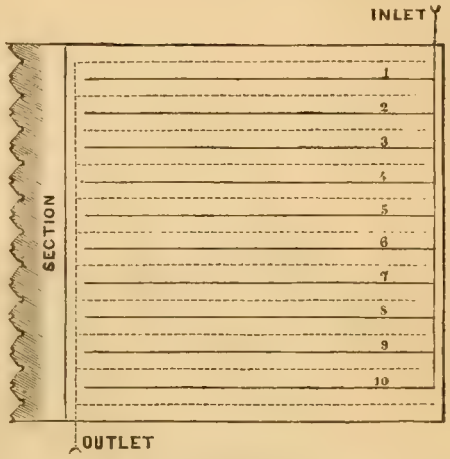


Fig. 4.—LEVEL FIELD.

ground is dry and firm, so that the edges of the gutters will not be disturbed by poaching. Whether used for pasturing or for mowing, it is beyond peradventure that the crop will be very greatly increased, and that under conditions at all favorable, the cost of preparing the ground and of the slight labor needed in directing the watering will be largely repaid. I know of no American experience to which I can point in illustration of this fact, but only because there is no American experience on the subject, (this side of the far western states and territories, where irrigation is a necessity for all crops). In many parts of Germany, Italy, France, Spain, and the East, and in Mexico, the value of pure water irrigation is amply attested by constant practice, and any one who will study the records of its effect, will see that in assuming an increase of crop from 1½ tons per acre to 3 tons per acre, I have by no means exceeded the truth. Aside from this, as irrigation meadows are permanent meadows, the whole cost and inconvenience of frequent breaking up and re-seeding is done away with; and so much of the farm as is brought under this system may be depended on for regular and permanent productiveness, without reference to the frequent drouths which interfere so sadly with our calculations in ordinary farming.

The gutters and ditches will interfere slightly, but not very materially, with the use of the mowing machine, and with two or three portable bridges, both this and the hay wagon may be easily taken to any part of the field. It has not, of course, been possible in a short sketch like this, to give clearly the detailed directions which fill volumes of scientific books on the subject, but I have tried to give enough of the leading features of the work to enable an ingenious and enterprising American farmer to experiment in a small way without the danger of going very far wrong.

Bee Notes.

BY L. C. ROOT, MOHAWK, N. Y.

[The Department of the Apiary, formerly so ably conducted by the late Mr. Quinby, will hereafter be in charge of Mr. Root, who was the partner of Mr. Q., and therefore familiar with all the details of his successful practice. ED.]

Preparing Bees for Winter.

Success in wintering will depend very much upon the present month's operations. If colonies are sufficiently populous, and have a prolific queen, the next important step is to ascertain the amount of honey in each hive, and if any are found wanting, to give them a supply. We must first know what the hive, combs, and bees, will weigh without honey, and add 20 lbs. for in-door wintering and 30 lbs. for out of doors, which will be a sufficient supply. To determine the amount necessary, weigh an empty hive and frames, and allow 10 lbs. for bees and combs. In some cases this will be an over-allowance, but with old combs, containing bee-bread, it will be found to be a fair average.

The cheapest and best food may be prepared by using *A* coffee sugar;" add 4 lbs. to a quart of water, bring to a boil, skim, and allow it to cool. This syrup is more desirable than honey, as it is not liable to induce robbing while feeding, and the bees winter equally well upon it.

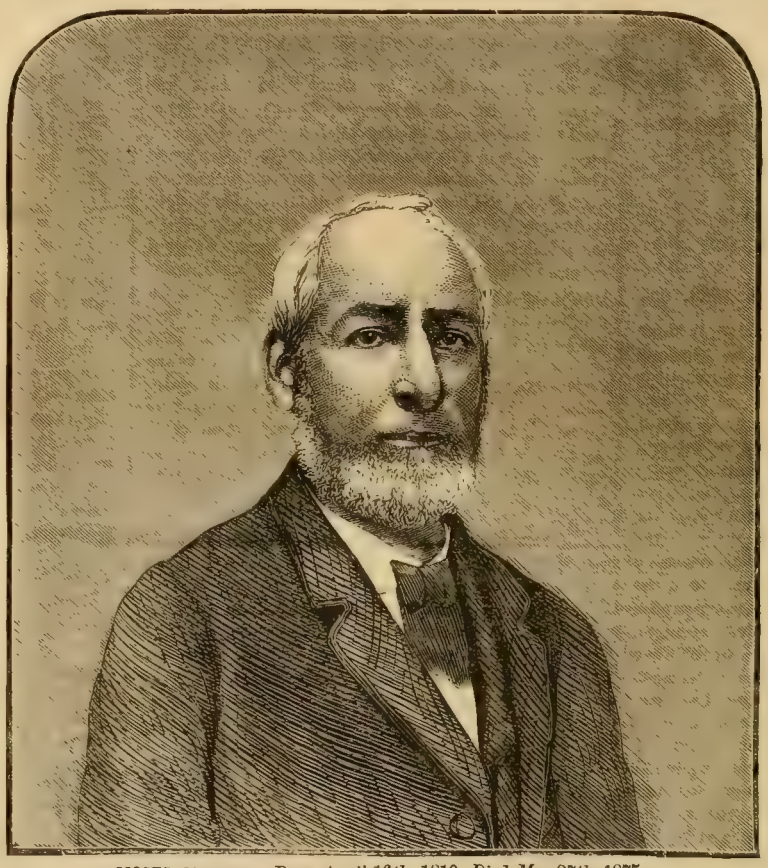
Probably no question will interest bee-keepers more than the best way to feed. During the five years we were associated with the late M. Quinby, our experience in this direction was quite extensive. In the fall of 1869 we fed over 5,500 lbs. of sugar. Those having box-hives may use some good feeder, or a dish of proper size to set under the cap on top of the hive. Fill the dish with the honey or syrup, and throw on fine shavings or cut straw, to prevent the bees from falling into it. Those using movable frames will find the process we have most thoroughly tested and adopted, practical and convenient. We put the feed directly into the combs, as will be described. Each comb, if well filled, will hold about 5 lbs. Combs may be removed from the hives that are to be fed, filled and returned; or, if there is a surplus of empty combs, they may be prepared before hand, and exchanged for empty ones in the hive at one operation. Fill the combs as follows: Take a can or tub about two feet across the top, in which place the syrup made as above directed. Then take a board a little wider than the depth of the frames, and nail a strip on each edge, which shall project about one inch above, to prevent the liquid from running off the sides of the board, and to conduct it back into the tub. Place one end of this board on the tub, and the other upon legs elevated enough above it, so that the feed will run off freely, (see fig). Then, in a common quart dipper, punch $^1/_{16}$-inch holes, about $^3/_5$ of an inch apart, over the bottom. Place the frame of empty comb on the board, and dip up the syrup, letting it drain into the cells. A little practice will indicate the distance the syrup must fall, as there must be force enough to drive it to the bottom of the cell, and not so much as to cause it to spatter out. In turning the combs to fill opposite sides, care should be taken, or the combs may fall out of the frames. To prevent this, use a piece of thin board, the size of the frame, placing it under it while filling, and raise the comb with it to an upright position, and then place the board on the opposite side, and fill as before. As fast as the combs are filled, set them up perpendicularly, where the extra syrup may drain off. These operations must be performed in a room where bees can make no trouble. Combs filled with syrup must be placed in the hives after the bees stop flying at night. Too much care cannot be taken to prevent robbing. After the required amount is put in the combs, it is well to weigh the whole again, to see that nothing is lost by robbing. Feeding should be done as early as possible this month, while it is warm enough for the bees to seal up the cells. In colder latitudes it would be well to do it in September, especially if the bees are to winter out of doors. If, by weighing, some

FILLING COMBS.

hives are found to contain more than the necessary amount of honey, heavy combs may be exchanged for light ones from other hives. Colonies may be unfit for winter from containing too much honey. The idea of wintering light swarms, or those with few bees, we can not oppose too strongly. In all our practice we have not found a point in its favor. A colony in good condition for winter has plenty of bees, a fertile queen, 20 to 30 lbs. of honey or syrup, and a free passage through the combs.

The Late Moses Quinby.

In July last we announced the sudden death of Mr. Quinby, who for many years had been a contributor to the *Agriculturist*; in response to the requests of several interested in Bee Culture, and as a tribute of our own respect, we give a likeness of



MOSES QUINBY.—*Born April 16th*, 1810, *Died May 27th*, 1875.

him in the present number. The portrait is from a photograph selected by the members of his family, and very satisfactorily reproduces the features of our Great Apiarian.

CLEANING UP.—The rubbish which is left in the fields, in the orchards, gardens, and around the yards, at the close of the season, furnishes hiding places for a vast number of vermin. Eggs and larvæ of destructive insects, chinch bugs and other pests find a safe refuge, wherein to pass the winter in corn-husks, stalks, and stubs, left upon the fields, and upon or beneath pieces of bark, chips, weeds, loose boards, and in corners of out-buildings. If the rubbish is gathered, raked up with horse or hand-rakes, and burned, and buildings whitewashed, myriads of vermin would be destroyed and prevented from propagating. As soon as the fields are cleared from crops, and work in the gardens and orchards ceases, a general clearing up should be made, and no quarter given to vermin of any kind or anywhere.

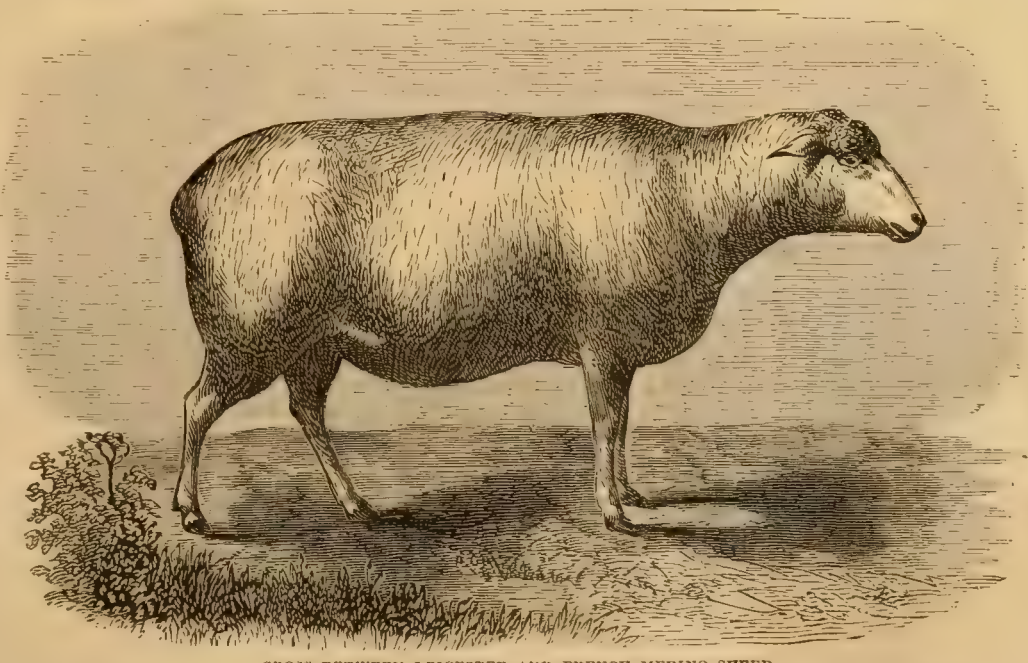
The Foot and Mouth Disease.

A severe out-break of the so-called "foot and mouth disease," or epizootic aphtha, has recently occurred in the southern part of England. In the county of Dorset alone, which is the center of the disease, 8,000 cases were reported in one week. All through the country, from the southern counties to Scotland, the disease is active, and is giving the farmers much trouble. Doubtless the unusual wetness of the season has been the chief cause of the increased virulence of the disease, which has existed sporadically all over the country, for some years past. All the efforts of the farmers and veterinary surgeons, aided as they have been by the legislative appointment of sanitary inspectors, charged with the duty of "stamping out" the disease by summary slaughter and burial of infected cattle, or by the isolation of infected herds, have been unavailing. The disease attacks cattle, sheep, and pigs. Hares and rabbits suffer equally with these, and are a frequent cause of spreading the contagion from one pasture to another. The disease has appeared at times at several places in this country, but fortunately so far no serious out-break has occurred. Neither do we think such an occurrence probable, on account of our more favorable and healthful climate, our less luxuriant pastures, and our less artificial style of feeding. Nevertheless, we have had an unusual season. The long continued wet weather has furnished one condition favorable to the occurrence of this or other epizootic diseases in low pastures, or in localities where sudden alternations of temperature are experienced. Hot days succeeded by chilly nights, when the lower stratum of air is filled with moisture or fog, are especially provocative of a typhoid type, such as aphtha, ("foot and mouth disease"), anthrax, (black quarter or carbuncular erysipelas), or splenic apoplexy, which is the well known "Spanish fever" of the western herds. These are all blood diseases, marked by a very depressed condition of the animal, high fever, difficulty of breathing, disorder of the brain, evinced by stupor or convulsions, and a highly inflamed and often gangrenous condition of parts of the body. In the "foot and mouth disease," the feet, tongue, and lips, are affected. Blisters appear on the coronet around the hoof, at the heels, and between the claws of the hoof; also on the lips and tongue. These break, leaving raw surfaces, which may run together and ulcerate. The animal can neither stand, walk, nor eat. It may recover in two or three weeks, when the disease has spent itself, or it may die very rapidly, with the hoofs sloughed off, and abscesses formed upon parts of the body. The first symptoms are a fit of shivering, followed by a cough, indisposition to move, fever, and a desire to get away from other cattle. The hind legs are occasionally stretched out and shaken, and on examination are found blistered as above mentioned. Saliva flows freely from the mouth, and the lips will be found hot and blistered. The proper treatment is to give a gentle purgative, as 8 oz. of Epsom salts, with 2 ounces of ginger, in sweetened water, at once. Then careful nursing is all that can be done. The mouth should be washed frequently with a mixture of 1 quart of water and 1 ounce of tincture of myrrh. In the absense of the myrrh, 1 ounce of alum may be used, with an infusion of a handful of sage leaves, in hot water. The large blisters on the tongue and lips should be opened with a sharp-pointed knife. The feet should be washed with warm water and carbolic soap, and bound up in cloths, wetted with a solution of 2 drams of chloride of zinc, in one pint of water. Warm bran and oatmeal slops should be given, and infusion of linseed meal. No solid food should be offered. The affected animals should be separated from the others, and kept quiet in well ventilated clean stalls. In case an animal should die, the stall where it has lain should be thoroughly cleansed with hot lime-wash, and the mangers washed with hot lye or soft soap suds, before another animal is put into it.

Cross-Bred Sheep.

The cross-bred races of sheep are the most popular breeds with those who look to the wool and mutton for their profit. The pure-bred sheep, so-called, or those which go back to a long distant ancestry for their origin, are chiefly bred not for their value in wool and mutton, but for the purposes of crossing upon other races for the production of a really profitable market sheep. The pure South Down, the Cotswold, and especially the Leicester, are found to be less profitable sheep for the farmer than the Oxford, the Hampshire, and the Shropshire sheep. These last are cross-bred sheep, and amongst English farmers, go by the significant name of the "rent payers." In Germany and France the pure breeds have been found less profitable than cross-breeds, and we are now making the same discovery in this country. There is a popular need for a sheep which produces a large carcass of choice mutton, along with a fleece of wool which bears as high a price per pound as that of any of the pure races, and which can be brought to early maturity and made to weigh heavily at less expenditure than the pure-bred sheep. At the same time we need a sheep of hardy constitution, which can stand the rough usage of the farm better than the high-bred races. We know of no farmer, unless he has been most favorably situated, who has been able to keep a flock of pure-bred sheep of the kinds mentioned up to their original standard. It does not pay a farmer to keep the pure breeds for the production of mutton at 6 to 8 cents a pound. But he can produce half-bred sheep by the use of pure-bred rams, whose mutton will be worth the highest price of the market, from ewes whose mutton would not bring more than 4 cents a pound. Thus the business of breeding pure-bred sheep to supply rams to farmers for the purpose of improving their flocks has reached to great proportions, and must still increase. But the English bred sheep are not exactly what we want. We want some native breeds, which shall not need to go through a course of acclimatation, nor to be periodically re-inforced by new blood imported for the purpose, thus making us dependent on foreign breeders for our stock. As regards the mutton and long-wool sheep, we need now to go through just such a course as has been long pursued with the American Merino, and which has resulted in the production of the best fine-wool sheep, at least for our purpose, in the world. A competent judge of Merinos in Australia recently stated that an American Merino ram, imported into that country, could not be excelled in any other country in the world. We need to arrive at the same result as regards breeds for mutton and combing wool. Some of our breeders are making praiseworthy efforts to this end. We mentioned, a short time ago, the attempt made by Mr. Crozier to establish an American cross-bred sheep, and Mr. Joseph Harris, of Rochester, exhibited at the last meeting of the New York Wool Growers' Association a sheep produced by a cross of the Cotswold and Merino, which promises to become a valuable race of sheep, both for mutton and wool. For the purpose of showing what has been done in the way of crossing elsewhere, and with what success it has been done, we have reproduced the portraits of two cross-bred sheep, taken from photographs from two excellent foreign publications, the London Agricultural Gazette, and the Paris *Journal d'agriculture pratique*. The first of these is a portrait of a Hampshire Down sheep, which is a cross of the South Down ram upon a white-faced, long-horned, coarse, inferior sheep, which has existed for a long period in the county of Hampshire in England. The prepotent influence of the pure-bred South Down has got rid of the horns, and has given a black face, while the carcass and fleece have been so improved by judicious inter-breeding, as to greatly surpass those of the improved parent. These cross-bred sheep were found by Mr. Lawes in his elaborate experiments in feeding sheep to make more mutton from a given weight of food than the South Down, which is so superior a sheep to the old race which furnished the other parent, that it has entirely supplanted this latter and caused it to disappear altogether from its old home. The Hampshire sheep has been such a successful cross, that it has been made the basis of another cross-breed, the Oxfordshire sheep, which has sprung from the Hampshires and the Cotswolds, and is now a close rival of both its parents. The sheep, whose portrait we give, was bred by Mr. Rigg, of Hampshire, England, and has taken several prizes as a two-year old ram. The Hampshire Downs mature quickly, the lambs weigh 100 lbs. at a year old, and the mature sheep at two years weigh alive 180 lbs., yielding a mutton that is not overloaded with fat, and has a good proportion of juicy, well-flavored, lean meat. The fleece averages about 7 pounds of wool, suitable for combing. Our second illustration is a portrait of a cross between the English Leicester and the French Merino. It is a somewhat unusual cross, but has resulted very successfully. It was made by Mons. M. E. Pluchet, of Trappes, France, who has now a flock of 500 of these sheep. The flock was commenced in 1839 by crossing Rambouillet Merino ewes with a pure Leicester ram. It was only after many attempts that an entirely successful result was reached. The half-blood ewes being unsatisfactory, were crossed with rams of quarter Leicester blood. This cross produced a much better sheep than either of the parents; but after some years of inter-breeding it was not found sufficiently profitable, and the ewes were crossed with a pure Leicester ram, and the produce of this cross were crossed with rams of the previous cross, or of three-eighths Leicester blood. This produced a sheep with 8¼ sixteenths of Leicester and 7¼ sixteenths of Merino blood. This sheep—of which the illustration is a portrait—yielded at 24 months old, and on the same pasture, as much meat (but of superior quality and greater market value) as the large French Merino produced at 36 months; the fleece, being much finer and softer, but not so long as the Leicester, weighed 9¼ lbs., and sold for more than the Merino wool. After many years of inter-breeding, this sheep continues to improve in quality by close attention to selection of parents, and is very profitable.

HAMPSHIRE DOWN SHEEP



CROSS BETWEEN LEICESTER AND FRENCH MERINO SHEEP.

In Germany the favorite cross is between the Cotswold and Merino, and at the Vienna Exposition of 1873 many specimens from some large flocks of these cross-bred sheep were exhibited. They were the in-and-in bred produce of the first cross, and weighed at 14 months old, when they were usually marketed, 140 to 148 lbs. alive. The mutton of these sheep was highly valued, the sheep selling at 8 cents a pound live weight, after having been sheared. Their wool is much finer and is more thickly set on the skin than that of the Cotswold, and is in good demand for the worsted and clothing manufactures. In these successful efforts at cross-breeding there is certainly encouragement for our breeders to attempt to meet the growing demand for these improved sheep, of which we have room for more than two or three classes.

Walks and Talks on the Farm.—No. 142.

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Thrashing by steam more than met my expectations. We thrashed in the field. The engine will burn either wood or coal. We used wood. We drew two cords of four-foot wood to the machine, and set up a circular saw. As soon as we had 10 or 15 pounds of steam, a belt was put on, and we sawed the wood into short lengths at a lively rate. We were getting up steam at the same time, and thought this much better than sawing by hand. We commenced thrashing with 80 pounds of steam. It was a ten-horse-power engine. It thrashes no faster than a horse machine, but it does not get tired, and keeps up a steadier motion, and is under more immediate control.

In thrashing as you draw in from the field, the only difficulty is in gathering up the rakings. I had the field raked, and the rakings put into cock before we commenced, and kept the steel horse-rake going after the wagons while we were drawing in, so that everything was cleaned up as we went along, and when we were through we were through, and the whole field done, and the work finished. I had three teams and four wagons. We put on a load of rakings, and drew it up to the machine, and let it stand there without horses, to commence on, and sent the other wagons to pick up rakings. In drawing sheaves, one good pitcher and three wagons, will keep the machine going. One wagon (*A*) is at the machine; another wagon (*B*) has just been unloaded, and is going on its way to the pitcher; while the other (*C*) is being loaded. By the time *C* is loaded, *B* is right behind it, with the ladder up, and the driver ready for the sheaves, while *C* starts off for the machine. As soon as *A* is unloaded, *C* is at the machine, ready to take its place, and *A* drives off to the pitcher. It gets there just as *B* is loaded and ready to start for the machine.

It requires one man to pitch, a boy to rake, and (in my case) a man to cock up rakings, and pitch on a load of rakings, or pitch a little on to a wagon whenever it reached the pitcher before the other load was finished. Three men to load, drive, and unload. A man to cut bands. Two men on the straw stack. A boy to hold bags and tie them, and another to draw the grain home, with another man to lend a helping hand as occasion requires. In other words, we require twelve men or boys, besides the four men who go with the machine.

In thrashing barley, I was in doubt as to which was the better plan, to pitch the gavels or bundles as left by the reaper, directly on to the wagon with barley forks, or to first put the barley into cock. I tried both plans. I cocked up half the field, and had it raked between the cocks, and the rakings put into cocks before we commenced. This I found *decidedly* the better plan. With a fair crop of barley, put into nice cocks, two good men will pitch as fast as the machine can thrash; but in picking up the gavels with barley forks, it was all that four pitchers could do to keep the machine going. Until better advised, I shall always cock my barley in future. When we have, as we soon shall have, a good machine to bind, it will of course be better to bind our barley into sheaves; but when left loose, it is better to make it into good-sized cocks. But the real point in managing barley, is to grow a good heavy crop, with plenty of straw. Then, with good weather, harvesting and thrashing barley is easy and pleasant work. But a poor, light crop of barley, on cloddy or weedy land, is difficult to cut, hard to rake up clean, and a nuisance generally. My crop this year, owing to the severe drouth in May, was not as good as I expected, especially on the clayey parts of the field. I had 840 bushels from 28 acres. We thrashed out 480 bushels on Saturday afternoon—commencing at 2 P. M., stopping 15 or 20 minutes for lunch, and stopping at 7:45 P. M. We had to work lively to get the barley to the machine, but I do not think the machine waited ten minutes for us, altogether.

The Squire had a new Hubbard Reaper, and he sent his machine around to help me. Another neighbor had a Buckeye Reaper, and his son brought it to the field, and for some time we had four reapers going. The Deacon came along and was invited to act as Judge, but declined the honor. I watched the working of the different machines as they followed each other round and round the field. I could see very little difference in the smoothness of the cut, or the evenness of the bundles. They all did good work, except on a few clay spots, where the barley was very short and thin. None of them cut up the barley entirely clean on these spots, and we had to leave a little for the sheep and pigs. But where the barley was anything like a good crop, and no matter how heavy it was, or how badly lodged, as was the case where we had some mangel pits, the machines worked to perfection. If there is any choice between these machines, it must be sought in the ease and simplicity of regulating the hight of cut, or the dip of the cutter-bar, or of adapting the rakes to high, short, light, or lodged straw. The truth is, our mowing and reaping machines, so far as doing the work is concerned, are about perfect. I was quite amused with the talk of the four drivers, when we stopped to examine and compare the different machines. Each man thought his machine the best. And in fact, when a man gets used to a machine, and has confidence in it, and knows how to regulate it, that *is* the best machine for him. The new Hubbard machine is very light, and easily managed, and does good work. By changing horses and keeping them at a lively walk, the man cuts 15 acres of barley with it in one day.

My old Johnston Reaper is held in great honor on my farm. It is a very strong, powerful machine, made for the English and European market, and designed for cutting heavy crops of lodged grain. I have a special affection for it. I think it is six years ago since I first heard of the machine. I had a great crop of oats and peas that year, which were twisted and lodged, with the upper parts of the pea vine still green and growing. I set six men to cut them with short Winsted scythes. It was hard work and slow, half an acre being as much as a man could do in a day. A farmer in the neighborhood told me that there was a machine made at Brockport, that would cut these peas, and the next day Mr. Johnston and two of his associates brought a machine to see what they could do. The machine was started, but clogged up. Mr. Johnston took a fork and tried to keep the platform clear. They managed to get round the field, Mr. Johnston evidently trying to find out where the trouble was. I was sorry for his disappointment, and said, "You need not feel bad about it. It is asking too much of any machine to cut such a tangled mass of green stuff as this."—"Can we go round the field once more?" he asked.—"Certainly," I replied, "do just what you like," and the team started round again, with Mr. Johnston calmly and thoughtfully watching every motion. "That will do," said he, as they came round to the gate, "it is no use trying more to-day."—I thought he had given up the matter, but he had simply discovered where the trouble was.—"I can do it yet," he said, quietly and modestly.—And sure enough, after taking some part of the machine to the factory, and making the necessary change, we put on the horses for another trial. The six men were cutting in the field. The machine was thrown into gear, the horses started, the fingers pushed under the peas close to the ground, the knives played rapidly back and forth, the rakes picked up the laid crop, and every other one was allowed to rake off the platform. It took me a few seconds to comprehend what we were doing. I could hardly realize the fact that *there*, right before my eyes, was a machine actually cutting that tangled mass of green peas and oats, and raking it into the desired bundles, and doing the work rapidly and better than we could do it by hand. But such was the case. On went the machine. The six men put up their scythes. Their occupation was gone—or rather changed. For it is a fact, that a successful machine creates a demand for *more* labor. I employ no fewer men. But instead of mowing peas, they are hoeing mangels or cultivating corn-fodder. I have not had the pleasure of seeing Mr. Johnston from that day to this. His machine has been greatly improved, and has triumphed gloriously in many a hotly contested field, at home and abroad, but I have an affection for that old, weather beaten machine, which works as well to-day as it did then, and which I rarely look at without thinking what a grand thing it is for mind to triumph over matter—for brains to make the horse or steam engine do the work of human muscle on the farm.

I propose to make this old machine cut my corn-fodder this fall. If it was sown broadcast, it would cut it easily. But I should no more think of sowing corn broadcast, than I should think of sowing mangels, or beans, or potatoes broadcast. It needs cultivating. All the broadcast corn I have seen this year, is now yellow, and is drying up, while mine, though it curls a little during the day, is growing luxuriantly, and promises a heavy crop. I think the machine will cut it, but I am not very confident. If it won't, our inventors must turn their attention to the matter.

It is twenty-five years ago this month, since I wrote my first article for the old Genesee Farmer. And I have been writing every month since. I have just looked over that old article. I was fresh from the great experimental farm of Lawes & Gilbert, and the article embodied some of their most important results. The burden of it was, raise more clover, peas, and beans, keep more stock, and make more manure. I say the same thing to-day, only I should put first, "cultivate the land more thoroughly, and kill the weeds."—I thought then that wheat, barley, oats, corn, and other cereals, during their growth gave off nitrogen into the atmosphere, while clover, peas, beans, vetches, and turnips retained all the nitrogen they got from the soil and from dews and rains. The theory was simple and plausible, and the practical deduction safe and sound. But more recent investigations failed to sustain this view. The advantage of growing more clover, peas, and other leguminous plants, however, is as certain as ever. And I could say nothing more to-day, than I said then in regard to the advantages of feeding food rich in nitrogen to stock, and saving the manure. But it is well to forget the things that are behind, and press forward. There is more to be done, and more improvements to be made during the next twenty-five years, than were made in the past twenty-five. We have better implements, better roads, better stock, and better prices. I sold barley from this farm twenty-five years ago for 37½ cts. per bushel. Now I can get $1.10. Combing wool was not worth over 25 cents a pound. Now it is worth 50 to 60 cents. I sold a lot of splendid butter to go round the Cape in a sailing vessel to California, for 12½ cents a pound, and it got there safe and in good condition. I will not say it was as good as the gilt-edged Jersey butter, which now brings a dollar a pound, but at any rate such butter would sell for three or four times as much as it brought then. Pork, and good beef, and choice mutton have doubled in price, and so have eggs, poultry, and fruit. Let us be thankful. The indications point all in one direction, and I see clearly written out on the years to come, "Cash for good farmers,"—"Good farming will pay better in the future, than in the

past."—Marvelous have been the improvements in our cities and villages. We are a great and mighty nation. But the increase of wealth and population has been greater in the manufacturing districts, and in villages and cities, than in purely agricultural districts. Farmers are now to reap great advantage from this state of things, especially those who furnish better beef, mutton, pork, butter, cheese, and wool. And this means better farming, fewer weeds, richer land, larger crops, better stock, and more liberal feeding—and more intelligent and prosperous farmers. Let the agricultural papers push on the good work. I hope they realize what a power they are for good. Twenty-five years ago I presume the *American Agriculturist* had but one subscriber, where it now has several hundreds, and whatever the number it may now have, it ought to be doubled.

Two or three farmers have thanked me for publishing the weights of my sheep, and asking for further particulars. And *one* man has written to the publishers complaining that by giving the weights of my sheep I am using the columns of the *Agriculturist* for "puffing" my stock. Mr. Judd sent me this disagreeable extract from this complaining letter, but was kind enough to say, "I have confidence in your statements, and what we want is reliable facts."—These I try to give. We weighed our sheep and lambs July 16, and again August 16. The figures are as follows:

Nos.	*Age.*	*Weight, July 16, '75*	*Weight, Aug. 6, 75*	*Gain in one month.*	*Remarks.*
113	4 yrs.	231 lbs.	235 lbs.	4 lbs.	Cotswold ram.
224	2 "	246 "	265 "	19 "	" "
220	2 "	259 "	262 "	3 "	" "
221	2 "	236 "	249 "	13 "	" "
229	2 "	224 "	229 "	5 "	" "
246	1 "	168 "	173 "	5 "	" "
247	1 "	187 "	202 "	15 "	" "
250	1 "	187 "	198 "	11 "	" "
251	1 "	158 "	165 "	7 "	" "
253	1 "	202 "	218 "	16 "	" "
257	1 "	169 "	181 "	12 "	" "
258	1 "	183 "	200 "	17 "	" "
259	1 "	171 "	174 "	3 "	" "
Gr'de	1 "	144 "	146 "	2 "	Cots. Mer. 1 cross
"	1 "	193 "	193 "	0 "	Two crosses.
"	1 "	195 "	215 "	20 "	" "

These 16 rams gained 156 lbs. in the month, or 9¾ lbs. each.

The following are the weights of the lambs.

Nos.	*Sex.*	*When Born.*	*Weight, July 16.*	*Weight, Aug. 16.*	*Gain 1 mo.*	*Remarks*
423	R.	Feb. 27.	92 lbs.	105 lbs.	13 lbs.	Twins.
268	E.	" "	84 "	91 "	7 "	
429	E.	March 1.	72 "	87 "	15 "	
421	E.	" 2.	80 "	89 "	9 "	Twins.
263	R.	" 2.	87 "	101 "	14 "	
265	R.	" 3.	81 "	98 "	17 "	Twins.
282	R.	" 3.	83 "	96 "	13 "	
283	R.	" 8.	78 "	94 "	16 "	Tripl'ts
427	E.	" 8.	71 "	81 "	10 "	from 1
430	E.	" 8.	72 "	86 "	14 "	of oldest.
432	R.	" 13.	107 "	123 "	16 "	
287	R.	" 14.	89 "	104 "	15 "	
284	E.	" 14.	81 "	95 "	14 "	
422	E.	" 19.	92 "	109 "	17 "	
290	E.	" 19.	86 "	89 "	3 "	
297	R.	" 23.	89 "	108 "	19 "	
438	R.	" 24.	91 "	104 "	13 "	
279	R.	April 5.	77 "	86 "	9 "	

These are all pure bred Cotswolds. The average weight of the 18 lambs, July 16, was 84 lbs., and Aug. 16, nearly 97¾ lbs., or an average gain per head of 13¾ lbs. During the month the lambs had been weaned, which set some of them back considerably, still the average gain will compare favorably with the figures given by Mr. Lawes and other English farmers. I think we may conclude that though our hot summers are not so favorable for rapid growth as the more temperate climate of England, we may hope for as good success in raising these high bred English sheep as we have attained in raising high bred Short-horn cattle.

But a still more important question, at any rate one of much more general interest, is the results we may expect from using these high bred English rams on the common ewes of the country. As I have repeatedly said, my own experience is in every way favorable. Now, if any one thinks I say this simply because it may add a few dollars a head to the dozen or twenty sheep I may sell for breeding or crossing, he is welcome to his opinion. But as Mr. Judd says, let us have the facts. The following are the weights of all the *grade* lambs I have left, taken Aug. 16: 98 lbs., 94 lbs., 92 lbs., 90 lbs., 85 lbs., 78 lbs., 78 lbs., 72 lbs., 70 lbs., 68 lbs., 64 lbs. and 55 lbs., (twins), 62 lbs. and 56 lbs., (twins). We have been killing these grade lambs, and I can say is that I do not want fatter or better flavored mutton. It is really delicious, good enough for a farmer, and if any one wants better, let him get it if he can. The mothers and grandmothers of these lambs are common Merinos of which we have millions, and which can be bought at a slight advance over what their pelts are worth. One of these grade lambs from a common Merino ewe, weighed July 16, 72 lbs., and Aug. 16, 85 lbs. Another, also from a Merino ewe, weighed July 16, 70 lbs., and Aug. 16, 92 lbs., a gain during the month of 22 lbs. He is a big, rather coarse lamb with a heavy fleece of close wool, but which next spring will be long enough to pass for "combing."

Now what more do you want to enable us to furnish good mutton and good combing wool? Can any one desire more favorable conditions? We have pure bred long-wool sheep that can be bought cheaper than similar sheep sell for in England, the ewes can be obtained at a cheap rate; this grade wool is very scarce, and brings the highest price in market; the mutton is in growing demand, and will be still more appreciated as the supply increases.

I spent yesterday with Mr. James Vick, on his seed-growing farms. Vick is a most genial man, and his is a delightful kind of farming. He has 30 acres in the city worth $5,000 an acre, and a farm of 65 acres five miles from the city, where similar land is worth only about $200 per acre. Experience seems to show that our nurserymen and seed-growers find it more profitable to buy high-priced land near the cities than to cultivate strictly farm-land farther out. If they can make enough to pay interest and taxes, the advance in real estate in process of time makes them rich. Then labor is cheaper and less uncertain near the city than in the country, and manure costs less. On his country farm, Mr. Vick, was paying men for hoeing $1.50 per day, of ten hours. They board themselves, commence work at 7 A.M. and quit at 6 P.M., with an hour for dinner. In the cities labor is 20 to 25 per cent cheaper. And such will continue to be the case until farmers are less unwilling to sell an acre or two of land at reasonable rates to steady men who want a home for themselves. I could hardly realize that I was on a farm as we walked through acres of phlox, petunias, asters, dahlias, etc., all in full bloom. A large windmill pumps water into half a dozen elevated railroad tanks, and iron pipes laid under ground carries the water to all parts of the farm. If I had such an arrangement I should want to put some Peruvian guano, sulphate of ammonia, or nitrate of soda into the tanks, and try the effects of liquid manure.

The Liver Fluke.

The "fluke" is a parasite that inhabits the gall-bladders and gall-ducts of a large number of animals. It has been found in the squirrel, the rabbit, hare, dog, sheep, deer, ox, horse, elephant, and also in man. It is the most destructive parasite

Fig. 1.—FULL-GROWN FLUKES.

that infests the sheep, causing a disorder that carries off whole flocks, when the proper remedies are neglected or unknown. The shape of the Fluke is flat, oval, with a thicker conical portion towards the head, and flattening out like a leaf at the hinder part. In fig. 1 are shown some specimens taken from the liver of a sheep, and in fig. 2, young flukes from the same animal; these are all of the natural size. This creature is highly organized, and is provided with an intricate digestive and circulatory apparatus. In figures 3 and 4 is shown the intestinal canal with the digestive organs. The mouth is situated in the conical head, and there is a second sucker below the first, on the under side of the animal. Its nutriment is derived from the bile of its host. Fig. 5 represents the veins and other circulatory organs. The sheep is the most seriously infested of any of the domestic animals. The disease caused by the presence of these animals in the liver, has carried off millions of sheep in a year. In one year 2,000,000 sheep died in England alone, and many millions have died in a single year in Australia and South America. Many sheep yearly die in this country from this disease, without any suspicion or knowledge of the cause. The disease is known as the "rot," or the "liver rot." It is caused by the obstruction of the gall-ducts by the flukes, which have entered them from the stomach. The parasites are taken into the stomach along with the food cropped in wet or marshy places, in which they pass one of the stages of their existence. If there are but few flukes, the sheep suffers little or no inconvenience from them, but if they are numerous, they choke the smaller ducts, arrest the flow of bile, and irritate and inflame the liver. The sheep suffers first from jaundice, which causes the skin and eyes to become yellow. At this stage the sheep thrives and fattens rapidly, and the yellow color of the fat of many carcasses of mutton that are sold in the market, is due to this bilious derangement. In a short time the sheep fails, the skin and eyes become white and bloodless, a watery tumor appears beneath the jaws, the abdomen swells from dropsy, the wool becomes harsh and easily parts from the skin, and after lingering some time, the sheep dies, completely rotten, with every organ diseased. A knowledge of the natural history of this parasite, teaches a simple and complete preventive. As the fluke passes the first stage of its existence in water, the eggs voided in the dung of the infected sheep being hatched therein, it is only in wet undrained pastures, or in the neighborhood of ponds, that the sheep can take them into their system. Sheep that are pastured on dry fields are exempt. Wet pastures and meadows should therefore be drained and freed from stagnant water. Where their presence in the sheep is suspected, a cure may generally be effected by administering the following medicines, viz: 3 oz. of saltpeter, 2 oz. ground ginger, 1 oz. carbonate of iron, (colcothar of vitriol), 2 lbs. of salt, mixed with 6 quarts of hot water; to this mixture is added 6 ounces of spirits of turpentine, and the whole is bottled for use, in pint or quart bottles for convenience. A dose is two ounces or two table-spoonfuls of the mixture, well shaken, given in the morning before feeding; no food to be given for three hours afterwards. The dose is repeated every fourth day three times. A cow's horn open at the small end, is convenient for giving the medicine. The flukes are never found in salt marshes and near the sea coast, and a regular supply of salt is an excellent preventive in those cases where the use of low lands for pasture can not be avoided. The wide distribution of the fluke in America, is now a well ascertained fact. It has been stated that it was not native to this country, and only existed in imported sheep. Last winter flukes were discovered in the liver of the hare, and in that of the deer in Minnesota, and we have examined a portion of a deer's liver, in which more

Fig. 2.
YOUNG FLUKES.

Fig. 3.

Fig. 4.
DIGESTIVE ORGANS.

than a hundred of these parasites were imbedded. Fig. 6 is an accurate drawing—half life size—of a fluke taken from a deer's liver in Minnesota, by Mr. Joseph Batty, formerly connected with the *Agriculturist*, and an experienced naturalist. Numerous other specimens were sent by him to the Smithsonian Institute, at Washington, for preservation. The fact that this parasite abounds, should be a caution to owners of sheep to be on the lookout for its appearance in their flocks. The present season having been more than usually rainy, has been a favorable one for its increase in low grounds, and it is probable that during the coming winter we may experience more than usual trouble from this cause. Fortunately we have an unerring and timely symptom of the disease in the absence of the usual red color at the corner of the sheep's eye, and beneath the eyelid. When the sheep is seen to be ailing, and this sign is perceived, the above remedy should be administered without delay, and the sheep should have some extra nutritious food, linseed-cake meal being the best.

Fig. 5. VEIN SYSTEM.

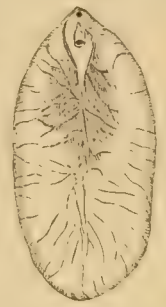
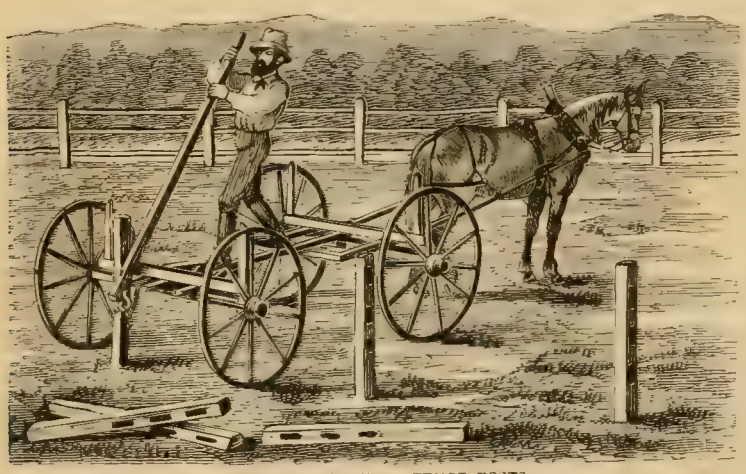


Fig. 6.—FLUKE FROM A DEER.

To Raise Old Fence Posts.

To remove old fence posts in the easiest manner, there is required a bar or lever six or eight feet long, and furnished with a hook at one end. Then backing up the running gear of a wagon from which the box has been removed, near the post, the lever is laid across the hind axle, and hooked to a link of a short chain with a ring at one end, which is looped around the post as low down as possible. To get a long purchase, the operator may stand on the reach of the wagon, and then, by throwing his whole weight upon the bar, the post may generally be raised so far out of the ground at once, that it can be lifted the rest of the distance without the use of the lever. If this is not the case the loop of the chain is to be slipped down lower on the post, and another lift will bring it up. A bottom-board may be placed on the wagon, which will give good standing room, and then the posts may be loaded as soon as they are drawn out of the ground, and removed. The annexed engraving illustrates this method very clearly.



METHOD OF LIFTING FENCE POSTS.

PROCURING WINTER FEED.—At this season a forehanded farmer may profitably lay in a stock of feed for the winter. Bran, mill-feed, or even brewer's grains may be bought in quantities very cheaply, as occasion may offer. The grains may be heaped in a field, covered first with straw, and then with earth, just as roots are pitted, in which condition they may be kept in good order until spring.

Poultry-Keeping as a Business.

There is more fascination than profit in poultry-keeping for those who know but little about it. The work seems to be very light, the fowls are supposed to be docile and easily managed, and the general idea is that there is nothing to do but scatter some corn upon the ground two or three times a day, and gather the eggs and market the fowls as fast as they grow fat. The numerous letters we receive, asking for information about poultry-keeping and the profits of it, are in great part from persons who possess this idea. For instance, one correspondent asks how many fowls will support a family of six persons, as though it was a matter of figures, and only necessary to procure a certain number of fowls and a house, and start them laying eggs and producing chickens to secure a permanent income. Now it is quite safe to say that any person who knows so little about the trouble and risks of poultry-keeping as this, would fail in it and lose his money, unless he should start with a dozen or two fowls, and go through an apprenticeship to the business. For a certain class of persons poultry-keeping is a very appropriate business, and may be made profitable. Those who are possessed of plenty of patience and perseverance, kindness and gentleness of disposition, a scrupulous love of order and cleanliness, a habit of close observation and quick perception, and a ready tact in finding out the cause when anything goes wrong, and in quickly remedying it, will generally succeed in keeping poultry, while those not so endowed will generally fail, and should never attempt it. Again, one must be able to justly appreciate either the difficulties or advantages of his location, such as the character of the land and its surroundings, the supply of food and the available markets. It would be folly to keep fowls on the borders of a forest or the margin of a swamp, on account of the vermin which such places shelter; it would be a great advantage to be located near a number of summer boarding-houses, where there is a good demand for eggs and chickens, or near a large city, where early plump chickens sell sometimes for 75 cents a pound, and where cheap food in the shape of various kinds of offal can be procured. A want of knowledge how to seize upon all the advantages that may offer, or to avoid all the difficulties presented, will be fatal to success. Upon the character of the ground will depend greatly the kind of buildings needed. A building suitable for a flock of poultry kept for business and profit, where the available ground is of small extent, is shown in our illustration. The building of which this is a sketch is in the center of a plot of land of less than two acres, which is divided into two portions, one being in grass and the other cultivated with fodder corn, rye, potatoes, or other crops. The house has two entrances, front and rear, so that the fowls may be turned into either part of the plot. It consists of a central building, with a wing upon each side. It is built of boards, and covered with Johns' asbestos roofing, which has the effect of discouraging the presence of lice by its strong tarry odor. The central apartment has three roosting poles on each side of the middle passage. From this apartment there are holes leading to rows of nests in the side apartments. These are appropriated for sitting hens, and for a room for packing eggs and a hospital for sick fowls, which are separated from the others until they are cured. When a hen is found sitting at night, she is shut off from the central apartment, and the nest opened to the side one. Above the central part of the building is a loft for keeping pigeons. The crops raised are for food or shelter for the chickens, and to encourage the presence of insects, upon which the young chicks may feed. Sheltered by the rows of cornstalks, or the stalks of rye or potatoes, the chicks

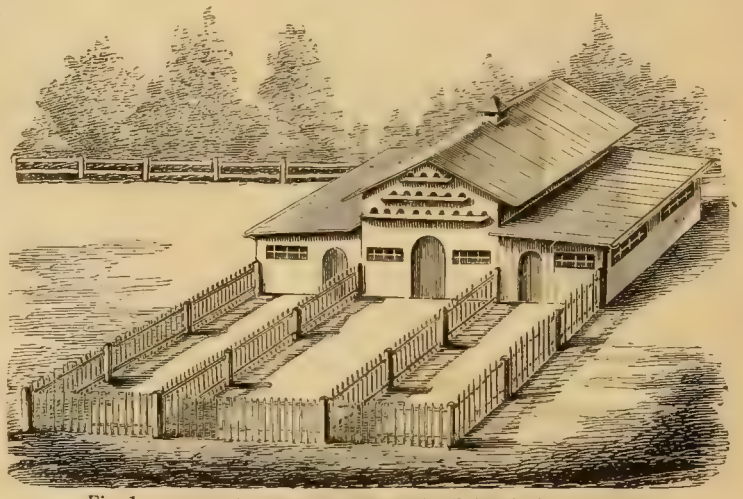


Fig. 1.—POULTRY HOUSE FOR RAISING CHICKENS FOR MARKET.

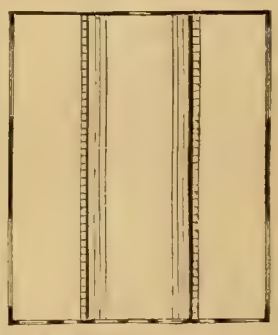


Fig. 2.—INTERIOR OF POULTRY HOUSE.

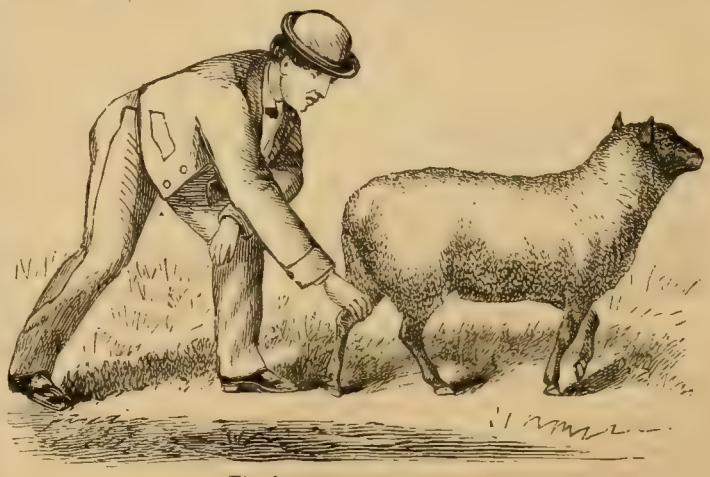


Fig. 1.—CATCHING A SHEEP.

are safe from hawks, which will not swoop down upon them, except in clear ground. The coops are kept in this part of the plot, being moved daily to fresh ground. The chickens are kept busy scratching in the loose ground, and there are few potatoes raised but what are scratched out and eaten by them. This furnishes them with employment and with some wholesome food, and it is for this purpose alone they are planted. The owner of this small chicken farm is a gardener and florist, and his wife manages this part of the business, producing every year two or three hundred pairs of chickens for market, besides eggs and old fowls.

How to Catch a Sheep.

A sheep should never be caught by the wool upon its back or sides. No other farm animal has so tender a skin as a sheep, and when it is roughly

Fig. 2.—CATCHING A SHEEP.

handled or pulled about by the wool, the skin is bruised and the wool which grows upon the part is injured. The proper implement is the crook, one of which should be kept with every flock. It is a light staff, eight or nine feet long, furnished at one end with a steel hook, shaped as shown in the illustration (see fig. 3). To use the crook, the handle is taken in the right hand and the hook is quietly put amongst the sheep, and beneath the belly of the sheep to be caught. The round knob prevents the hook from being caught by the wool or injuring the sheep. The form of the hook causes it to turn in a flat position as soon as it touches the sheep's belly. When it is drawn backwards, it slides down the hind leg until it reaches the thin part of the leg above the hock, which is caught in the neck of the hook. If the sheep struggles and bounds forward, the leg slips past the neck of the hook, which acts as a spring and gives way, permitting the leg to slip through to the head of the crook. The sheep is then caught "by hook or by crook," and cannot escape. The shepherd holds the animal while he gets to its head, when he can secure it by putting his hand beneath its chin or breast. The sheep will not struggle when thus held. When there is no crook, the proper way to catch a sheep is, to take it by the hind leg above the hock, as in fig. 1, (on the preceding page), and then hold the sheep until the other arm can be passed beneath the throat or in front of the breast, as in fig. 2. If the sheep is to be lifted, this can be done by seizing the left hind leg and passing along the animals right side, putting the arm around its breast. When thus held, a sudden lift will hoist a sheep into a cart or wagon, unless it is a very heavy one, when it should be made to walk up a plank, assisted to do it if necessary.

Fig. 3.—CROOK.

A Shed or Barrack for Straw.

The interesting and instructive articles by Professor Atwater upon feeding stock, which have been published in the *Agriculturist* for some months past, ought to give such a clear idea of the value of straw for feeding purposes, as to induce farmers to save it carefully and use it economically. If a good farmer should have ten or twenty tons of hay, he would have no other thought than to feed it to stock, so as to have its value returned, and at the same time to make manure for replenishing the fertility of the farm. But straw is not so regarded, and it is made to serve the purpose of a waste material by being thrown under the cattle. Now, if a ton of straw, which is considered worthless, can be made equal in feeding value to a ton of hay by the expenditure of four dollars worth of linseed or cotton-seed cake meal, corn meal, or bran, it is certainly a great saving and economy to feed it to cattle instead of treading it under foot. Leaves, dry earth, sand, swamp muck, and other substances, worthless for feed, can be procured for bedding in any quantity, and the straw saved for feeding. As the season for thrashing the grain is now at hand, we would urge the greatest economy in saving and using straw, so that none of its value may be lost.

As it is not often that it can be put into the barn directly from the thrashing machine for want of room, some means of preserving it from the weather must be provided. To stack it so as to keep it dry and in good condition, is more costly than to provide a roof under which to stack it. The cost of a roof like that in the engraving, figure 1, will be about $25 to $30, and it will hold 10 tons of straw. This small cost will be returned in one season in the saving of straw. To thatch a stack of the same size, so as to preserve the straw equally or nearly as well, would cost $5, if the necessary skill were at hand to make a good job, which is very unusual. The materials required are as follows: 4 posts 8×8, 24 ft. long, 512 ft.; 4 pieces 2×8, 20 ft. long, 80 ft.; 4 pieces 2×8, 2½ ft. long, 14 ft.; 4 rafters 2×4, 16 ft. long, 43 ft.; 8 other rafters 2×4, 64 ft.; 600 feet half-inch boards for the roof; in all about 1,300 feet of lumber. It is built as follows: The posts are set firmly in the ground, 19 feet 6 inches apart each way, so as to form a square. Holes are previously bored in the posts with an inch and a quarter auger, 8 inches apart, beginning 10 feet from the ground. Four pieces of 2×8, 20 feet long, are then fitted together outside of the posts—but kept loose from them by iron straps around

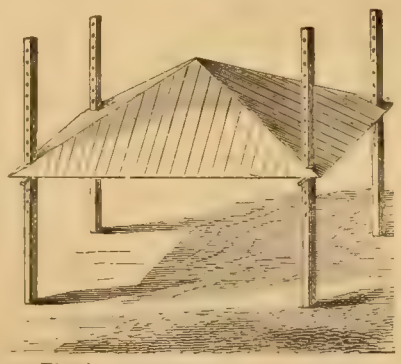


Fig. 1.—STRAW-SHED OR BARRACK.

the corners. The straps are bolted on with carriage bolts. Pieces of a cast off wagon tire will make excellent straps. Corner-pieces of 2×8 and 2½ feet long are then fitted and bolted, and screwed up tightly. This is the foundation or frame-work for the roof, and is shown in figure 2. Four rafters of 2×4, 16 feet long, are then fastened to the corner-pieces, meeting at the center where they are fitted and joined together. Eight other rafters are fastened to the framework, two in each triangular space, to strengthen the roof and for the roof boards to be nailed to. Well-seasoned half-inch siding boards, having the edges rabbeted so that one overlaps the other for half an inch, are then laid horizontally, commencing at the bottom, and nailed with shingle nails. The roof is then finished. Eight pins of one-inch round bar-iron, 18 inches long, are then procured, two for each corner, and a lever 6 or 7 feet long. The roof is raised one corner at a time by resting the lever on one pin, and when it is raised to the next hole, the second pin is placed in it to hold it there. As the straw is stacked, the roof is raised, and as the straw is used it may be lowered. The stack may be built two feet larger than the roof each way, if the straw at

Fig. 2.—FOUNDATION OF ROOF.

the outside is carefully laid to slope downwards, and is raked off before the roof is let down upon it. If a horse-fork is used, a hook should be fastened to the peak of the roof before it is raised to its place. One of these stack covers built at the corner of four fields, so as to answer for each, would be very valuable for stacking hay, corn fodder, or grain, and save much expense in barn-room.

Animal Pokes.

BY L. D. SNOOK, YATES CO., N. Y.

Breachiness or the unruly proclivities of horses, cattle, and sheep, are supposed by some to be hereditary. Whether this be so or not, animal pokes and fetters of various kinds are frequently necessary and are extensively used. The cheapest plan of retaining the ordinary jumping animals is to keep a good fence with sufficient food for sustenance; as this cannot always be done, the alternative is to put pokes on them. In fig. 1 is shown the simplest and cheapest, but one of the best. An iron bolt should project from the long part near the end for at least two inches. This catches upon the fence as the animals jump over it, and often throws them, so that they do not care to repeat the trespass. Fig. 2 represents a poke with both sides of equal length and weight, hanging more evenly upon the neck, and with two iron bolts. Fig. 3 represents one with a bow, through which pass two iron bolts ten inches long. The lower one passes through a projecting piece three and one half feet in length, the upper edge of which rests against the upper bolt in such a manner that the piece projects downward at an angle of about 45°. This arrangement has proved to be a very serviceable one. While the projecting piece admits of easy feeding, it prevents approaching too near the fence, and, unless the wearers acquire the

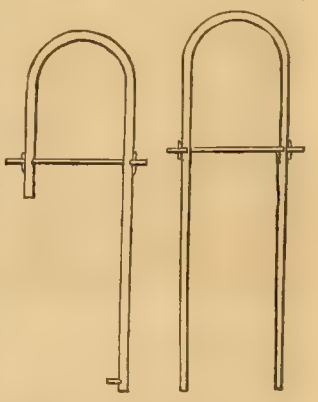


Fig. 1. POKES. Fig. 2.

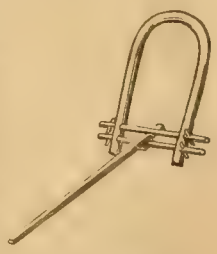


Fig. 3.—POKE.

knack of throwing the end over the fence, they will always be found in the field where placed. In fig. 4 is shown a heavy, yet serviceable contrivance. It consists of a block of wood (*P*) one foot in length, 3×4 inches square, with holes bored for the bow ends; also one obliquely for the stick, which is stationary. With holes bored at right angles with the bow, it makes an excellent poke for breachy cattle. At fig. 5 is seen one form of a costly poke, but it is perhaps the most effective one of all that are here shown. It is shown in perspective in fig. 5, with a section at fig. 6. The part *R* is made of hard wood, fourteen inches long, three quarters of an inch thick, and 2½ inches wide. In the center of this are firmly driven six wrought-iron nails, the points of which are filed sharp and project into corresponding holes made in a stick of the same size, shown at *L*. This is kept from separating by two short bolts, *S*, *S*; the spiral springs shown keep the posts, *R* and *L*, equidistant from each other. The whole is bolted to the bow by bolts, *M*, one of which must be unscrewed to remove the poke or place it upon the animal. As the lower ends of the poke press against the fence, it forces the pointed nails through the stick, *R*, into the neck or chest of the animal.—It is best to avoid the use of fetters or hopples if possible, as they not only strain a horse, but girdle the fetlock. Some farmers tie their horses down, that is, place a surcingle around them, into which, between the fore legs, they tie the halter-strap. If the chest should become sore, place the strap upon the outside of the fore-leg, remembering that they should be tied quite short, for if a jumper can raise his head above the fence, he will soon be found on the other side of it. Another plan is to pass the halter-strap between the fore-legs above the surcingle, and tie the end around the fetlock joint of the hind leg.

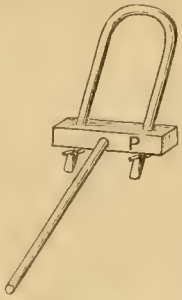


Fig. 4.—POKE.

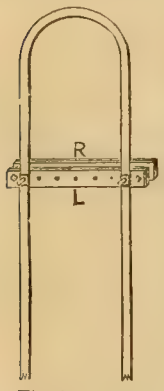


Fig. 5.—POKE.

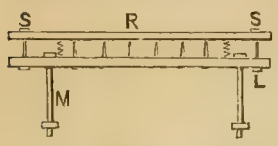


Fig. 6.—SECTION OF FIG. 5.

To Steady Portable Mills.

BY L. D. SNOOK, YATES CO., N. Y.

The continued jar and vibratory motion of portable machines, such as mills, fanning mills, presses, and others, while in use, keeps them continually creeping, (so to speak,) from the position in which they were originally placed, and where it is desirable they should remain. This is especially true of the fanning mill, in such general use on the farm; many are so annoyed at its instability that they nail it to the floor. This very inconvenient method, when the mill has to be removed and again secured at each successive using, will, after a fashion, accomplish the object, but there is a better, neater, and more economical plan, which is here illustrated. In figure 1 is shown a square-headed spike, which is driven into the bottom of the leg, standard, or support, as far as the shoulder; the head is then filed to a point, as indicated by the dotted lines. The forms in figs. 2 and 3 are made by the blacksmith of the shapes shown, and inserted as before noticed, care being used not to break or bend them during the operation. The idea shown in fig. 4 is to cover the entire bottom of the standard with a thin plate of iron, with the edges turned up and notched with a file, and the whole secured by screws or nails as shown. A cheap way is to saw in the bottom of the standard, and in this cavity insert a bit of band or hoop iron, which should be driven firmly in place, the projecting edge is then filed sharp as indicated in fig. 5. Nails may also be driven partially in, and the head then filed sharp.

Fig. 1.

Fig. 2.

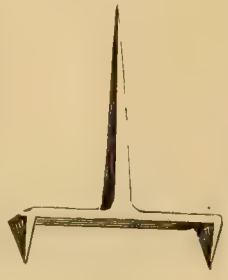


Fig. 3.

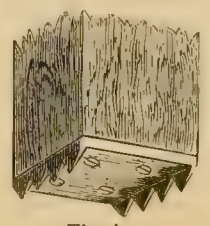


Fig. 4.

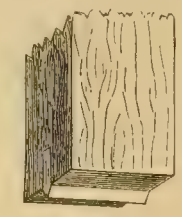


Fig. 5.

Washing machines, benches, etc., should have a small piece of india rubber attached to their floor surface by a screw; bits of the soles of rubber boots or shoes will answer the purpose, and are always at hand.

A USE FOR SKIM-MILK.—As the use of skim-milk for the manufacturing of cheese is very unprofitable, we would suggest that it be condensed for use in the cities, where an extensive demand for it would undoubtedly spring up. The skimmed milk of a farm or creamery, is vastly better than the milk produced at those so-called "dairies" of the towns and cities, where distillery slop is the food of the cows. It is pure, wholesome, and agreeable, and for cooking purposes, and for children's food, would be very acceptable. It could be afforded at a somewhat less price than the pure condensed milk, and if honestly sold for what it is, and labelled "Condensed Skimmed Milk," it would not enter into unfair competition with the pure condensed milk, although it might in many cases be used as a substitute for it. Any use of the skimmed milk would be better than that of making it into cheese, which goes "a begging" in the market at one or two cents a pound, and bringing decent cheese into disrepute.

Spontaneous Generation of Plants.

A contributor to one of the daily papers asks a series of "interesting questions."

1st. Some 10 acres of land had for 75 years been submerged by a mill-dam, the pond had in that time filled up from 4 to 6 feet, with brook sediment, which, after the owner had drained and reclaimed it, was so soft that it was mid-summer before a man could go over it to sow some grass-seed. Now, "There appeared upon it, late in the season, an immense growth of a strange grass, overtopping the plants that came from the seed he sowed, and became so dense and long that he supposed it would smother out his plants. He had the strange grass cut and made into hay of little value. This new comer, that sprung out of the pond mud—not in sparse plants, but in a dense mass—Prof. Prentiss of Cornell University calls rice-cut grass. Then he asks a pertinent question, which I want your learned and experienced contributors to satisfactorily answer: 'Where did it come from?'

"Did it come from seed which had been washed down by the brook from above, and if so, did this seed lie and keep sound in that mud thus covered by water for generations, and germinate so luxuriantly as soon as the water was drawn off, and take the lead of pure, sound seed so recently sown by the writer?"

Well, if this conundrum were put to us, we should say that Rice-cut-grass was much more likely to flourish on such a mucky soil as that, than the meadow-grass which was sown. And as to where the seed came from, we should say it came down stream. No doubt there was plenty of this grass all along the banks of the stream, and in the pond when the water became shallow. The seed would keep its vitality in the soil for some years, perhaps for many years; but here there is no need to count on that. Probably the freshets of the fall and spring had seeded it with rice-grass.

2nd. "These strange things are continually happening. I am told that the old fields of Virginia, which have been cultivated for hundreds of years, when abandoned, as they frequently are, are almost certain to produce a crop of pitch pines, and no other kind of evergreens or trees. Do they come from seed?"

What's to hinder? Plenty of these pine trees not far off, from which every fall the wind carries the winged seeds, and sows them broadcast over the land.

3rd. "Again, when the dense forests of hemlock are cut off for lumber, and the annual fires run through and burn up the limbs and other refuse, the next season is sure to bring a dense crop of what is commonly called fire-weeds, and nothing else, to be succeeded the next year by an equally dense growth of blackberry vines. There had not been any fire-weeds or blackberry vines growing on this land for perhaps a thousand years before."

More likely raspberry than blackberry vines. But, anyhow, it is a very unusual piece of open hemlock woods, that has not plenty of fire-weed and blackberry or raspberry vines growing round, here and there, and when cleared off and burned over, the wind will do the sowing of the downy seeds of the fire-weeds, fast enough, and the birds will drop the seeds of the berries; and the freshly liberated potash in the ashes, which these plants particularly like, gives them the advantage over everything else at the start.

4th. "Again, I have seen quite a dense growth of hemlock spruce (*Abies Canadensis*) growing out of earth taken from the bottom of a shaft sunk for iron ore, perhaps 50 feet deep or more. Now, there had been no vegetation growing out of that earth for 20 centuries, and it may possibly be 20,000,000 of years."

Now is it not much more probable that these hemlock trees came from seed left on the freshly exposed soil by the winds, than from seeds buried in the ground for twenty centuries or twenty millions of years? But the propounder of these questions declines both alternatives, and says: "My opinion is that they did not come from seed, but that a certain condition of soil (or matter) and climate will produce a certain kind of plant, which opinion I may hereafter more fully elaborate, if not convinced to the contrary." And he falls back upon Prof. Tyndall, as probably "correct in the formula recently advanced by him, that 'matter contains within itself the power and the potency of all life.'"

Now we question whether all the "potency" Prof. Tyndall can muster, ever led him to expect rice-grass from muck, blackberries from ashes, and hemlock trees from gravel. Finally, while the ingenious correspondent is more fully elaborating his opinion, he might take up one question more, which has some bearing upon it. A clergyman of our acquaintance, reading from his pulpit the noble discourse on Charity, how that "it hopeth all things," and "endureth all things," added, "nevertheless, Charity is not a fool." So, also, we may suggest, Nature is not a fool. She does not do utterly superfluous things. Having provided seeds in plenty, each producing after its kind, and plentiful means for their dissemination, she trusts to them. She keeps her "promise," and turns her "potency" to much better account, and reflects a higher wisdom than doing needless work.

Why should we take any notice of our newspaper philosopher? First, because there is some amusement to be had out of it. Secondly, because it is a specimen—somewhat more glaring than common—of the loose way in which questions of this kind are apt to be discussed.

GROWING CROPS WITH CHEMICAL FERTILIZERS.—The annual sale of crops from the farms of Mr. Prout and Mr. Middleditch, of England, have recently taken place. These farms are worked entirely without feeding any stock other than the working teams, and without barnyard or stable manure, only chemical fertilizers being used when thought necessary; the whole of the crops are sold, grain and straw together, to be cut and removed by the purchasers, at their own cost. Mr. Prout's crops, the twelfth in succession, realized $54 an acre, for wheat, (200 acres). 130 acres of barley brought over $45 an acre, forty acres of oats brought over $56 an acre, and the clover over $79 an acre. 427 acres sold for $23,154. Mr. Middleditch received about the same prices for his crops.

Nursery Agents and Tree Peddlers.

BY TRUETT'S SONS & MORGAN.

We notice the remarks in your August number, concerning nursery agents and tree peddlers. We fully agree with you that "the purchaser should have some assurance, that the trees, when received, did really come from said nursery, and that the proprietors of that nursery are responsible for their being the trees ordered, and that when they left the nursery, they were correctly labelled."

You then ask, what provision is made to secure the purchaser in this respect.

We have a system which was adopted by us in the beginning of our business, and which we have elaborated, as the necessities of the business brought the points before us from time to time.

Taking in view, first: our own relation to the purchaser, and our responsibility to him, with a firm determination to do an honest, fair, and square business, that might be open to the world; then the stand-point of the purchaser, and the possible representation of an agent eager to swell his sales. Theorizing thus, we originated a system which we believe to be unique, and a "new departure," as concerning nursery proprietors.

You describe how the thing is managed at nurseries where *you* have been. How that Smith, the peddler, calling himself an agent, gets orders for trees from Jones' nursery. At the digging season he goes to Jones and buys certain blocks or odd rows of trees; he has his own men to dig them, he takes them to some vacant place, and labels them as may be, packs them in lots to suit his orders, and all that Jones has to do with the matter, is the trees grew on his ground and he sold them.

Now our plan is this. No man acts as agent for the Rosebank Nurseries, without our printed form of orders, and our uniform series of plate-books. We allow no man to fill a part of his orders with us, and another part of his orders with somebody else; we fill all and every part of his orders or none. We sell no stock in bulk; that is, we sell no "certain blocks or odd rows of trees" to anybody. We have articles of agreement with every agent representing our nurseries, in which it is stipulated that he shall sell by our catalogue list, our order books and plate-books; no other variety or specialty of fruit, to be sold under any circumstances without our permission. The agent in addition, binds himself to send us his order books as fast as filled. Now in order to see if any eager salesman has exceeded his authority, or been too enthusiastic in his representations to the purchaser, we take the order books as fast as they come in from the beginning of the season, and dissect them piecemeal. In this way. We have a set of printed abstract sheets or blanks, uniform with the order-book, and upon these abstracts or blanks we tally every item that every order calls for; the number, the variety, the size, and description of everything sold, is noted. Our blanks for the season's work, become as voluminous as those of a quartermaster in an active compaign, and it takes the entire time of one first class man to attend to these abstracts.

From the start, then, we know whether our agents are running us too heavily on any particular variety of stock, and we are enabled by a prompt notification to the men at work taking orders, to regulate the sale of varieties, completely and absolutely. Care being taken first, to catalogue nothing but the best, the agent will not go astray in selling anything in his forms.

In this dissecting of orders, and the tallying of each variety, we arrive at a perfect knowledge of what the agent is doing, the representations or promises he makes, and any irregularity is promptly discovered and corrected, if per chance an agent new to the business blunders into an error. After the orders have been tallied, and every item "varietized" upon our abstract sheets, they are then "written up;" that is, all the labels and address tags are written by one of our own clerks, in our own office. The labels and an address tag for each order, are then twisted togther into a bunch, and strung upon a wire, each delivery by itself, ready for the packing shed, in the fall. The orders, or bundles of orders, as contained in the different bunches of labels, are then taken by our own men, and packed under the sepervision of one of the proprietors. Our variety schedule or abstract sheet is closely watched and kept posted up, and at the end of the season, serves as a digging list, by which our stock may be placed in the trenches. The digging and placing of stock in trenches, is also done by our own men, under the supervision of another one of the proprietors. There are no agents about our grounds while packing is going on. They are not forbidden, but they prefer to stay in the canvassing field, until just before delivery time, then come to the nursery office, to stay perhaps a half a day, then return to their points of delivery to collect their pay from a satisfied set of customers.

THE ENGLISH LABORERS' UNION.—As might have been expected, the organization known as the English Laborers' Union, has been split into two parties, one headed by Joseph Arch, and one by Mr. Vincent, the editor of the Laborers' Chronicle, who claims to have been the author of all the letters and publications that have been issued, bearing the name of Mr. Arch. The rock upon which the Union split, was a dispute about the lavishness of the expenditure. The necessity for reform in the condition of the English agricultural laborers, however, is too absolute to permit the purpose for which the Union was formed to fail, and if it temporarily suffers from the incompetence or unworthiness of its leadears, it will purge itself of them and begin afresh.

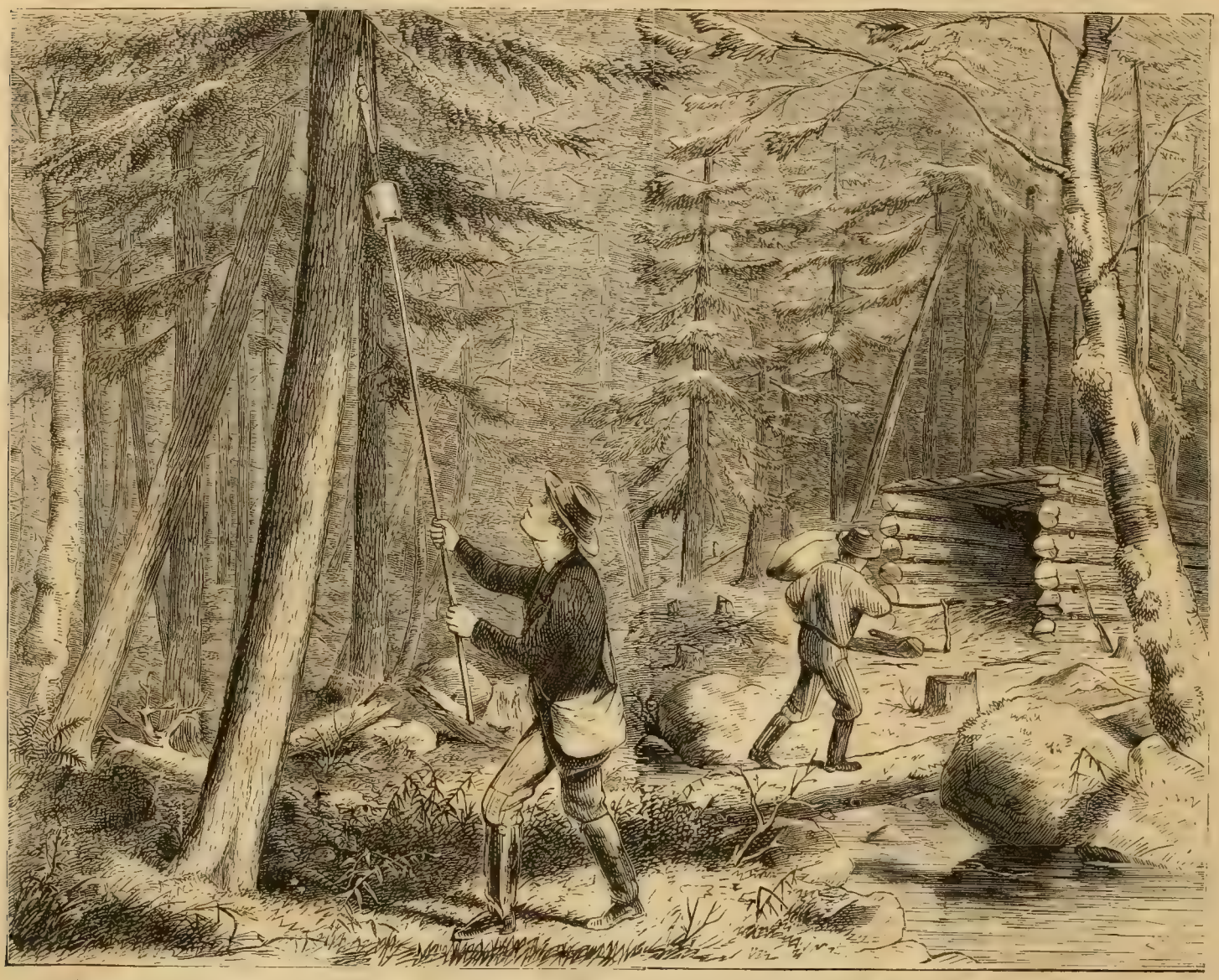
CURING CORN-FODDER.—A method of curing partly dried corn-fodder, is to cut it with a fodder cutter into chaff, and mix it with straw cut in the same manner, then pack it away in a mow, trampling it down closely. A little salt is scattered amongst the layers as they are packed in. When thus put up, fermentation takes place and a gentle heat is produced, which improves the straw, making the whole even and equal in flavor, so that it is readily eaten by cattle or horses. Those who have the material, the leisure, and a horse-power straw cutter, might usefully prepare a quantity of fodder in this way as an experiment.

The Eucalyptus in California.

BY ONE OF OUR STAFF ON HIS TRAVELS.

The genus Eucalyptus is a very large one, as it includes about 150 species of mostly Australian trees, which are broad-leaved evergreens, some of which exceed in size even the "big trees" of California. Several of these were introduced into California a few years ago, and one of them, *E. globulus*, the blue-gum, is so much more esteemed than the others, that when *Eucalyptus* is named, it is there understood that this is the species referred to. It is already widely disseminated in that state, and forms a striking feature in the landscape around San Francisco Bay. It grows with great rapidity, making a tree ten to fifteen feet high the third year from planting. It grows readily both from the seed and from cuttings, and all the nurseries that we visited in suburban districts and in the country had large plantations of Eucalyptus. The leaves upon young trees have a peculiar bluish-green tint, which changes to a darker green as the tree grows older. It is planted in almost every conceivable position where trees are allowable. It is an admirable tree for the side-walk, and for the lawn in suburban districts and in country villages, having a clean trunk and leaves, and forming a deep shade. It grows in compact masses and makes a good wind-break in three or four years. It makes wood rapidly, and is planted both for fuel and timber. It is remarkably tenacious of life, and when well started at the beginning of the rainy season, few plants fail even in exposed and unpromising localities. We saw all along the Piedmont district, east of Oakland, avenues planted with this tree, and hardly a gap in the long rows. The people begin to have faith that all that treeless region east of the bay, even to the top of the mountain range, may be clothed with forest. In visiting the site of the old red-wood forest that overlooks the bay, we noticed a plantation of Eucalyptus upon the ranch of Mr. Low. It was well up the mountain, upon a steep acclivity, and in a spot as unpromising as any that could have been selected. Almost every plant was in flourishing condition. The tree seems to be a success everywhere. Its sudden popularity is owing in some measure, probably, to its supposed influence in absorbing the malaria of fever-and-ague districts. Numerous accounts are published, showing an improvement in the health of people in malarious districts, where the tree has been planted. Dr. N. P. Gibson, of Alameda, a very careful observer, attributes this not to any peculiar value in the tree, but simply to its more rapid growth and greater power of absorbing water. He says: "In eight years the Eucalyptus will attain a diameter of eighteen inches, and a hight of fifty feet. Experiments which I have made determine these facts. A branch of this tree, which contains 105 square inches of leaf surface, will absorb 3.25 ounces of water in eighteen hours. The entire tree will furnish an area of 310,500 square inches of leaf surface, and the amount of water daily absorbed by the roots would equal 609 lbs. or 76 gallons. Given a stagnant swamp of 200 acres, each acre having 200 trees, and the amount of water daily absorbed by the roots would be 3,040,000 gallons, or 405,333 cubic feet. This would be equal to a constant stream of water, running at the rate of three miles per hour, of two feet wide and six inches deep."—The rapid growth of the tree is not overestimated. Under favorable circumstances a tree has been known to grow twenty feet in a year, and to attain the hight of seventy-five feet in eight years. Whether it be true or false, the belief in the ameliorating influence of the tree upon the climate in malarious districts is general, and the planting goes on with enthusiasm. It is doing much to change the landscape and to redeem the California summer from its sere and desolate aspect. It is good to turn from the boundless seas of wheat and oat stubble to the long evergreen rows of the Eucalyptus. Planters in the eastern states can hope little from the Eucalyptus; we gave last March an account of the unfavorable results with the different species of Eucalyptus as far south as Georgia, and we shall be glad to know how it has done with others.

THE USE OF DYNAMITE IN CLEARING LAND.—The value of this explosive in agricultural operations, has been favorably shown in a recent clearing of a tract of land in Ireland. The land was so covered with boulders, as to be useless on account of the cost of removing them, until dynamite was tried. Charges of two ounces in a six-inch hole shattered immense sunken boulders, so that they could be removed with ease, and the pieces used in building walls, without dressing. Loose boulders were broken up by placing charges of dynamite upon them and covering these with other boulders. The explosion broke both the boulders into fragments fit for building stone.



GATHERING THE "GUM" OF THE HEMLOCK SPRUCE.—*Drawn and Engraved for the American Agriculturist*

Hemlock or Spruce "Gum."

Under the incorrect name of Hemlock or Spruce Gum, considerable quantities of an exudation from the Hemlock, or Hemlock Spruce, (*Abies Canadensis*), are annually sold. We say incorrect name, as the article is in no sense a gum, but is properly a turpentine, consisting of resin and a small proportion of volatile oil. It is similar in its nature to the white turpentine which exudes from the southern pine, but having less oil, is much harder. It is also called Canada Pitch. The Hemlock is well known as one of the most beautiful of our native evergreens; it is abundant along our northern borders, and especially so in Canada; its lumber, though of a coarse kind, is largely consumed for various purposes. The Hemlock while growing contains very little resinous juice, and the lumber is very free from it, but when the tree from any cause begins to decay, the turpentine or "gum" appears upon the surface in nodules, some of which are the size of a walnut or smaller, while others are as large as a hen's-egg. It is a very common thing among young persons who live where the hemlock abounds, to get into the habit of gum chewing; the orientals use mastic for strengthening the gums and perfuming the breath, and it is possible the use of chewing-gum originated in some such notion. The chewing-gum of a few years ago was this turpentine of the hemlock, or spruce gum, refined, but this has latterly been superseded by paraffine, which is a white wax-like product of petroleum or coal-oil. The resinous product yielded by the Norway Spruce in its native forests, is known in this country as Burgundy pitch, and is much used for making a stimulating plaster; the Hemlock pitch is also used for the same purpose, and very closely resembles the imported article in its effects. In one way and another the article finds a sale at prices which make it worth while for those who live near hemlock forests to collect the "gum," as it is always called by the country people. The artist who furnishes the drawing illustrating the method of collecting the material, sends the following notes: "Early in the fall or late in summer after the haying is over, some of the farmers go "a gumming," as it is called; they go to the woods, where they erect a log shanty, and proceed to collect the gum for the market. A long pole is provided, below the tip of which is fastened a circular box or receptacle, generally the leg of a boot, kept in shape by a circular piece of wood through which the end of the pole projects; on the end of the pole is fastened a chisel. Having a satchel slung over his shoulder, the collector proceeds in search of gum-bearing trees, and when found, uses the implement in the manner shown in the engraving. The gum detached by the chisel falls into the box beneath, and from this, it is transferred from time to time to the satchel or haversack. These receptacles are emptied into a large bag, and when this is full it is taken to the log hut. During rainy days, evenings, and at odd times, the gum is freed from twigs, bits of bark, and other impurities, and made ready for market. The collecting of gum is sometimes very profitable; in some cases over $2,000 having been realized by two men in a single season, but such returns are exceptional. The season lasts until the weather becomes too cold to work in, when the camp is broken up."

The Shrubby Cinque-foil.

The Cinque-foils, or Five-fingers, as the species of Potentilla are called, are some of them quite common, while others are more local; some are low herbs, one looking much like a starved strawberry vine, while a few are shrubby. The one here figured is known as the Shrubby Cinque-foil, *Potentilla fruticosa*: it has woody stems from two to four feet high, and very much branched so as to make a dense bush; the pinnate leaves have five to seven leaflets, which are oblong-lanceolate, entire and furnished, especially on the under side, with silky hairs. The flowers, which are large for the genus, are at the ends of the small branches, are numerous, and continue to be produced all summer. This is a widely disseminated spe-

cies, growing from Newfoundland to the Rocky Mountains, and is very common in wet grounds in all the northern states. A well formed specimen is quite as handsome as many shrubs which find a place in the garden. The chief interest attaching to the plant is that it is in some localities disposed to become a weed. Last year "Hardhack" was mentioned as troublesome in New England, which we thought rather strange, but when it was said to have yellow flowers, it was evident that the true Hardhack was not the plant in question, as that has dense spikes of pretty rose-colored flowers. At last some of the troublesome "Hardhack" was sent to Dr. Vasey, at the Department of Agriculture, who at once saw that it was the Shrubby Cinque-foil, the plant here figured. It appears that the plant spreads very rapidly in moist land, and unless checked, will take complete possession of a pasture, and soon render it worthless by choking out and starving the grass. It has been especially destructive in some parts of Connecticut. Weeds of this character—those with perennial roots—are very difficult to eradicate when once they have possession, hence it is important that they be checked on their first appearance. Much of the trouble with weeds arises from the fact that cultivators do not know their most dangerous enemies when they see them, and we have known a comparatively innocent plant to be regarded as mischievous, while the real intruder was growing unmolested. Hence, in publishing the portrait of a weed, we do the readers of the *American Agriculturist* even a better service than we do in illustrating plants worthy of cultivation. It is well to repeat here what has been often said before, that mowing or otherwise cutting off the tops will, *if persisted in*, finally subdue the most obstinate of weeds, and that there is no specific, no application other than hard work, which will get rid of them. We presume that the calling of this plant "Hardhack," must be very local, and we hope it may not reach beyond its present limits. The present is an illustration of the importance of accuracy and uniformity in the common names of plants, and we hope that the officers of the State Board of Agriculture in Connecticut, who sent the plant to Washington as Hardhack, will do what may be in their power to correct this misapplication of a well-known name, and insist upon its being called by its proper name, *Shrubby Cinque-foil.*

SHRUBBY CINQUE-FOIL.—(*Potentilla fruticosa.*)

BLUE STOKESIA.—(*Stokesia cyanus.*)

The Blue Stokesia.

In our attempts to popularize our native plants, and to introduce them into gardens, we have generally called attention to those which were comparatively common and readily procured. This time we describe one of the most beautiful, as well as one of the rarest plants in the country, *Stokesia cyanus*, the Blue Stokesia. We endeavor to preserve uniformity in the common names of plants, and when a name is well established, do not often alter it, however inappropriate it may be. Mr. Robinson in his hardy flowers calls the plant "Stokes' Aster," a name that we do not think it desirable to perpetuate, as it is very far from being an Aster in its botanical characters, though it has something the aspect of a China-Aster, which is not an Aster at all. Sutherland in his work on Hardy Herbaceous Plants, calls it "Blue Stokesia," a name which seems preferable to the other. "But why go to English authorities for the names of American plants?"—some very patriotic individual may inquire. Because the English have enterprise enough to send over here and get our good things and cultivate them and make them known to the rest of the world. Priority of publication establishes a name in horticulture and in botany unless there are very good reasons for setting it aside; Robinson's and Sutherland's works were both published the same year, and we are not troubled by the question of priority, but select which of the two seems preferable. So much for the name, which by the way we may say was, so far as the generic name *Stokesia* goes, given in honor of Dr. Jonathan Stokes, an English botanist of the last century. The plant, as the engraving shows, belongs to the composite family, and is included in a small tribe of which the well-known "Iron-weed," (*Vernonia*), is the most common representative. It is a perennial herb with branching downy stems, growing from one to two feet high. The leaves are entire, the lower petioled and the upper sessile, and fringed at the base. The flowers at the ends of the branches are in large heads with something the appearance of those of a *Centaurea*, or Star-thistle, figured just a year ago, (Oct. 1874, p. 381); the heads have numerous leafy bracts at the base which are fringed with spines on the margin, as seen in the bud in the engraving; the head of flowers when well opened is three or four inches across, and made up of numerous florets, those on the margin

much larger than the others, and deeply split down, those towards the center smaller and tubular; the color is a deep sky blue on the margin of the head, lighter towards the center, where it is nearly white. The Stokesia is a native of the pine barrens of South Carolina, Georgia, and Louisiana, and is probably one of the rarest flowering plants in the country, as it is one of the handsomest. In England it is mentioned as "a choice plant," and as blooming in September and October, and in localities north of London it is advised to grow it as a pot plant, it being "well worth a place indoors or out." With us, near New York, the plant is perfectly hardy, and blooms in June and July, continuing to produce a succession of flowers for a long time, and is one of the most pleasing, hardy plants, native or exotic, we have in the garden. Here it is necessary to anticipate numerous inquiries and say "we do not know" to the many who ask where it can be had. We have but one plant, and cannot be tempted to divide it. Our seedsmen should arrange with their southern correspondents for seeds, and our florists can procure it, as they do many other native plants, from Europe.

Why the Peaches did not Sell.

EDITOR AGRICULTURIST: Early in the peach season, when almost daily rains caused the fruit to decay rapidly, very fair peaches, for immediate use, were offered at 15 to 30 cents the basket or crate. Both dealers and growers complained that people did not take advantage of these prices and purchase freely. It may seem strange to these persons that hundreds of crates were left to rot on their hands, to be thrown away the next morning; this and the fact that fine fruit at very moderate prices has since been of slow sale, may open the eyes of the raisers and dealers to the fact that the fault is as much their's as that of the people. People want peaches, but the growers and sellers will not let them have them. The present method of putting up peaches for the most part keeps the consumer from buying. To make a personal matter of it, I have not seen a crate or basket of peaches this year, or any other year, that I would take home if given to me. I want peaches, and would be glad to have them every day during the season, but the grower puts them up in a shape that prevents me from having them. Nothing more unhandy to carry than a basket of peaches was ever devised—unless it be a crate of the same. There is nothing to take hold of either by, and if carried at all, must be toted on the shoulder, or lugged somehow with both hands. Sometimes a handle is extemporized by means of a cord, but then the weight is too much to carry a long distance in one hand. There is such a thing as working too hard for a luxury like peaches, and rather than make a common porter of one's self, hundreds who would gladly purchase the fruit, go without. In my own case it is a long distance from a dealer to the ferryboat, and another long stretch to reach the cars which take me home, and I had rather go without the fruit than tote it this distance. And the same is the case with the majority of my fellow passengers. "But why do you not buy a part of a basket?"—I sometimes do, and it works in this way: "How much for half a peck of those peaches?"—"Sixty cents."—"How much for the basket?"—"A dollar and a quarter."—As there are five half pecks, (or should be), in a basket, this is paying largely for a small quantity. I do not so much blame the retailer, for I have seen how with all his care in digging down for the half peck, he is obliged to put in some of the fine fruit the grower has carefully placed at the top, and the remainder does not look very tempting. A basket of peaches was sometime in the past, a bushel, it has been growing smaller, until custom and agreement among growers has established it at five half pecks. The reason the cheap peaches were not sold was on account of the inconvenient size and shape of the packages. Let some enterprising peach-grower devise some method of putting up, say a peck of peaches, in a package which one can carry a mile in one hand without inconvenience, and I am very sure that no fruit offered in that portable shape will be thrown into the dock; customers will gladly pay enough extra to cover the trouble and cost, though they do not care to pay a dollar, as is often charged, for the fourth of a dollar crate, put up in a light basket that costs 10 cents. Messieurs peach-growers, people in cities want your fruit, we in the country want your fruit, but we rarely buy it, because you insist that we must take five-eighths of a bushel, in a shape that is as difficult to handle as it is to carry two pumpkins under one arm. Give us good fruit in handy parcels, and we the people will willingly pay remunerative prices, NEW JERSEYMAN.

Notes from the Pines.

It is only fair that those who have kindly inquired after the "man at The Pines," should be assured that he is there yet. When I began to write under the above heading, I did not intend to offer a regular series of papers. It is an open secret that the managing editor writes from The Pines, when he cares to give bits of personal experience in a more colloquial form than is allowable in an editorial. Brother Harris had a little rather set forth his failures than his successes, and it seems to me that he is never so happy as when the crops fail, the little pigs die, and everything seems going "to the bow-wows," though it must be said to his credit, that he draws useful lessons from his mishaps. Had I written last spring, it would have been to chronicle the havoc of the past winter, and as there was no useful lesson to be drawn from it, I preferred to keep quiet. When the destruction is so general, all that it teaches us is, that things before considered hardy, are really not hardy in such a winter as the last. Thrifty young apple-trees of well tested sorts, were killed root and branch; blackberries and raspberries of all sorts badly injured; grape-vines five years old either killed outright or sadly mutilated, and so on through the catalogue. If I cultivated these things as a business, I should feel as blue as one of my friends does; he is a nurseryman, and says it will take him three years to get his stock up to where it was last fall. Much of the destruction in the past few winters, has been ascribed, and apparently with truth, to the dryness of the soil.

THIS SUMMER'S RAINS must have gone far towards supplying the deficiency. Such continued moist weather as we had in July and August, has been most favorable to mildew, and the grapes look badly in spite of sulphur, which does but little good save when applied in hot dry weather.... The melon crop was badly injured by the rains; the vines so long without sun, were in an unnaturally succulent condition, and when hot and clear days came, the leaves curled and shriveled.

POTATO BUGS of course we have had. They were expected and watched for, and a persistent hand-picking kept them in proper subjection; there was little difficulty in keeping them from the early sorts, and very few larvæ came to perfection on the place. But in August the later broods began to fly, and they came in hordes from elsewhere. One might go through the patch and sweep the vines clean, catching them in the affair figured in August on page 294, and after finishing, begin again and get about as many as at first, so rapidly did they come in. It was useless to try to catch all the bugs that the surrounding country could supply, and we applied Paris green. The love of the Doryphora for the potato, is nothing to that of its passion for the egg plant. It seems almost a pity to pick the beetles from the egg plant, they seem so happy. Why don't some one patent the plan of setting out egg plants among the potato vines, to keep the bugs from them? Quite as practical things are patented. In their flight the bugs made their way all over the place, they were on the paths, in sheds and out-buildings, and a nuisance generally. They quite took the tops out of some ornamental *Solanums* in the flower garden, and made a vigorous attack on *Datura meteloides*.

TRIUMPH AND EXCELSIOR are the lofty names of the varieties of Sweet Corn upon which we have been luxuriating. The "Triumph," originated by D. C. Voorhes, Blawenburg, N. J., and distributed by B. K. Bliss & Sons, was mentioned last year. "Excelsior," which was brought out this season by Washburn & Co., Boston, is the result of years of careful selection and improvement, by Thos. G. Potter, the well known seed-grower of Rhode Island, where they know what sweet corn is. When we had Triumph on the table, that was voted the best, and on the days when Excelsior was before us, *that* was the best; then came days when we had both together, and we were confident of a final decision. One eating an ear of Triumph was sure that nothing could be better, until he had eaten an ear of Excelsior; that was rather the best, but it was only fair to take another ear of Triumph in order to be sure; then that would be adjudged better than the other, and Excelsior must have another chance, and so on. We have arrived at the conclusion that the capacity of the human stomach is not sufficient to allow a fair decision to be reached, as to the relative merits of these two varieties. Either of them is good enough for any living mortal. The Triumph has a longer ear, but the rows upon the Excelsior are closer, and we think that it remains longer in the tender state, proper for eating; both varieties are abundantly productive and superlatively good.

THE FLOWER GARDEN has suffered from the copious rains. Two beds of ornamental planting are all I have time for. One was planted in concentric lines of "foliage plants," the outer one being *Centaurea gymnocarpa*, which now presents a sorry sight, at least half the plants having decayed. Another bed, which I regarded as very effective, is a good sized circle, margined with two lines of *Echeveria secunda glauca;* within are nice, thrifty, medium-sized agaves, aloes, and similar plants, and among them was planted an abundance of *Othonna sedifolia*—introduced a gew years ago under the incorrect name of *O. crassifolia*—which made a dense charming green carpet, against which the other plants were seen with fine effect. I have but little fancy for garden embroidery, and the working out of stiff patterns with plants instead of colored worsted, but here was something worth looking at, and it received a tribute of admiration in a daily morning and evening visit. The rains came, and dampness prevailed, and the fleshy *Othonna*, which rejoices in a prolonged baking, was a succumbed succulent, and the bed in which I took so much pleasure, now looks like a parlor at house-cleaning time—the furniture is there, but the carpet is up. A short spell of dry weather will bring it all right again, as the stems of the *Othonna* are still alive. Let me in passing say another word for this *Othonna*, which is now to be had of all the florists; it is one of the most useful plants for a hanging-basket that I know of, and grows admirably in a dry room. For engraving and description, see *Agriculturist* for December, 1873, page 459. The most showy thing in the garden, is

A BED OF CANNAS,—Cannas which are Cannas, and it came about in this way. Mr. George Such, of South Amboy, N. J., asked in the spring if I would try a set of his new Cannas; of course I am always ready to try any new thing, and accepted them. My former experience with new Cannas had not shown them to be superior to the older sorts, and I hesitated about giving these new comers the post of honor; however, in deference to Mr. Such, the new comers had the bed on the lawn, and the old ones placed in the back-ground. That bed is now just splendid; we had reached quite as perfect foliage before, but these, while they are equal to the older kinds in the luxuriance and color of their leaves, flower with an abundance and brilliancy of which I did not suppose the Canna capable. "Prince Imperial," "Gloire de Lyons," and others are intense in their scarlet and crimson, and there are fine orange and salmon colored ones; "Impe-

rator," fortunately placed in the center of the bed is now some eight feet high, and increases daily. The bed stands in full view from my place at the table, and while enjoying the good gifts there set forth, I can marvel at the prophetic vision of Shakespeare, who propounded the conundrum:

"Can such things be,
And overcome us like a summer's cloud,
Without our special wonder?"

I reply decidedly not, for these "*Such* things" are not "without our special wonder" which is daily excited by their great beauty.

AMARANTHUS MELANCHOLICUS RUBER is a melancholily long name for a bright-leaved variety of the old "Love-lies-bleeding," (which, though English, is agonizing.) When left to itself it is one of the most brilliant of plants, but it must not be cut, as I have found to my cost, in trying to make it grow low. A check given to any of the Amaranths by being too long in pots, too dry, or by cutting back, throws them into seed-bearing at once, and they soon exhaust themselves....Can we popularize good things that are not generally known by frequent mention? Now, there is

KOELREUTERIA PANICULATA, a tree which has every element of popularity except its name. If one wishes a medium-sized tree, 15 to 25 feet, for a small place, one which shall be satisfactory in every respect, and unlike the trees which everybody else plants, what can be better than *Koelreuteria?*—It has every good quality of the Ailanthus without its faults; it is a shapely tree, eminently clean and free from insects; it has very dark green shining foliage, cut in a pleasing manner; it produces in July a profusion of spikes of bright yellow flowers; these are followed by a copious crop of large bladdery pods, which as autumn approaches, becomes handsomely tinged with red, and almost as showy at a distance as flowers. But the name! I have not much sympathy with this dislike to botanical names, but it exists, and if the name is an obstacle to making a meritorious tree better known, it must be bettered. *Koelreuteria* is closely related to our own beautiful Bladder-Nut, *Staphylea*. Then let us call this

THE CHINESE BLADDER-NUT, and ask the nurserymen to adopt the name in their catalogues. It grows readily from the seed, which in most seasons is produced abundantly, but my tree failed this year for the first time, which I attribute to the constant rains which prevailed during flowering time, and prevented fertilization; it also grows readily from root-cuttings....Another tree or shrub I would like to make better known is the

SORREL TREE, *Oxydendrum arborum*.—I had a fine one, 15 feet high, which was killed to the ground in the winter of 1872-73; it threw up several stems from the root, and I like it better in this form, a dense bush six feet high and the same across, than I did as a tree. Its long pendulous racemes of lily-of-the-valley-like flowers make it a charming plant in June and July, and its foliage, which is so clean and shining in summer, turns in autumn to such a fine crimson that if it did not flower, it would be worth growing as a (horrible name!) "foliage plant." There are so many good things not generally known that the catalogue of them would be quite as large as of those which are known. But I cannot close without a word for the

PERENNIAL PHLOXES.—I know of no more satisfactory plants than these, and though I have written about them before, I think the facts should be repeated that they are perfectly hardy, keep in bloom a long while; they flower most abundantly, and give a wide range of colors from pure white to crimson, with various sorts of marked, shaded, and otherwise variegated flowers. A dozen sorts cost but little, and make a grand show of themselves, and when the clumps get too large, you can divide them, benefiting your own plants, and blessing your neighbors with the surplus, and like the shepherd, you may get rich (in thanks), by the increase of your *Phlox*. These may also be raised from seed. I had some come from self-sown seed that were, some of them, quite as good as the named sorts. Seeds sown this month will give plants large enough to bloom next year.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

Farmers' Families.

One would suppose from much that is written, that farmer's families were to be pitied above all others. Is this so? Is the lot of the farmer's wife necessarily lonesome and dreary? Are farmer's children more abused than other children?—I can not see that such is the case. With a good husband and children, I would rather take the risks of farm life in any comfortable part of the country, than to undertake any other kind of life I have had a chance to try or observe. No position is exempt from troubles and temptations, but for a family of little children, a farm seems to me the safest place. And yet every thing "depends upon circumstances," and if the children take no interest in the farm or country objects, and if parents take less interest in the children's daily happiness and growth than money-making, the case is a hard one for all concerned. Since these papers were begun, I have lived in city, village, and country, and nothing suits me so well as the farm. In this the whole family are agreed. At present, agricultural papers and catalogues are voted among the most interesting of literature, and there is a never-failing interest in the growth of everything upon the place. I shall not tell what small business our present farming is; it is all that we can manage just now, and looks likely to increase with the passing years.

Farmers' wives are not necessarily over-worked more severely than other house-keepers. This depends upon the kind of work done on the farm, and the facilities for doing it. In fact, it depends mainly upon the husband. By proper consideration, he can generally save his wife from undue labor—at least he can do so as well as other men, for I think that it is almost impossible for husbands in average circumstances, at the present stage of civilization, to give the mothers of their children as easy and pleasant circumstances as all mothers ought to have, for the sake of the human race; this, however, is a matter of public concern quite as much as of private duty, and it is a business in which society and the individual must co-operate.

If the farmer has children, he must remember that their proper care is the most important business of their parents, and it is a great folly or gross wickedness, for him to carry on work which is injurious to them, work that keeps himself and his wife constantly anxious and hurried. If he slaves himself and wife, and the children too, as they grow old enough to be yoked to his business, for the sake of having plenty of money for his children to spend in coming years, he is a very foolish man; but if he is simply bound to get rich, and does not care how much it hurts his wife and children, he is a very wicked man. If the children are not well brought up, they will only squander the money so hardly earned.

Child life on the farm may have a wider range of wholesome experiences than child life in almost any other situation. Stock kindly cared for and petted, trees thoughtfully planted and tended, fruit well selected and cultivated, vegetables raised with a purpose and with thought about their habits and uses, flowers lovingly sown and gathered—all these are wholesome in their influence upon the youthful mind, and furnish a kindergarten of the best kind. Farmers' children who are not over-worked, and whose book education may seem to be neglected, often make excellent scholars when they go to school and college, and go with robust health gained from their early training on the farm.

If farmers' families have the good sense to dress with simplicity, and choose plain articles of furniture that are not too good for daily use and comfort—if they know enough to live on plain substantial food, with home-raised fruit served plainly but plentifully, instead of cake and pie, if among the necessaries of life they reckon good books and papers, they need not be so badly over-worked as they often seem, nor lead such lean poor lives intellectually. As for the social isolation, this is sometimes to be deplored, but it makes all the difference in the world whether it is a loving, happy, improving kind of family set by itself upon the farm, or a selfish, growling, ignorant set of people. The quiet of the farm is one of its chief attractions for me. There are few farms so isolated that our friends cannot find us there, and they who show themselves friendly will have friends.

Baby Clothes.

A few years ago I described the long flannel wrapper which was the best thing for babies that I knew of then. But now I think I like better than that the waist and skirt I used for my youngest child. I had no patterns, but the same style is in use, more or less, in different parts of the country. The waist is made plain, or straight, rather high in the neck, and with long sleeves. My little one was a May-flower, and needed an outfit for summer. So he had waists of thin silk-warp flannel, though his skirts were all wool. A waist 21 or 22 inches around the bottom when made, 5½ inches long under the arms, with sleeves 7 inches long, and 7 inches around at the arm-hole—will do for the child of average growth, until it is six or seven months old, (or older), and needs short clothes. It buttons behind with four flat pearl shirt-buttons, and the woolen skirt buttons to this waist by eight similar flat buttons. The child is prettily dressed when it has on this white flannel suit, and nothing over this. On many a hot afternoon last summer, my baby was allowed to go so, but mothers who can have every thing they like for baby's comfort, would doubtless prefer a handsome silk flannel wrapper on purpose for hot days. It is not often that we dare to take all flannel off from tender young babes who are accustomed to its use, but it is a shame to burden them with more clothing than seems necessary. The waist and skirt may be made as neatly as one likes. The skirt should be gored, so as to have very few gathers at the top, and those should be at the back. All seams should be laid open flat, and cross-stitched down. The skirt binding should be as flat as possible—wide "flannel binding" is best. I used the linen binding, an inch wide, stitching (with the machine) two lengths of the skirt band together—so that the band was made of white linen binding, lined with the same. In this the button holes were made, upright, or running across the binding, and not parallel with its length. Experienced mothers will see the convenience of having a young babe dressed in skirts which can be changed without undressing it, and this is the chief advantage of the waist over the flannel under wrapper.

A good way to dress winter babies is with a suit like the one described, only made of thicker flannel; over this a flannel Gabrielle suit as long as the skirt and dress, and over this the dress. In this case, the child is supposed to be dressed all in white, and its handsome cambric frocks need something warm underneath. But those of us who have several children, and a good deal to soil the baby's garments, will very likely put warm pretty colored flannel wrappers over its dresses. In winter it should always wear warm stockings even under its long dresses.

Of course the baby's night-dresses should be of flannel so that it may not suffer from the change at night. Half cotton Shaker flannel is good for these, and is preferred by some to all wool material for all of the baby's under flannels. It is very soft, and shrinks little if any. Make the night-gowns long enough to wrap up the little feet. A Shaker-flannel night-gown, made plain on the shoulders, and gored under the arms, like the little day-slips or frocks, is suitable for the whole year. In winter I add a plaid flannel wrapper, loose and long.

A baby needs a large supply of "napkins." Some physicians tell us that they should never be used twice without washing, but few of us can live up to such doctrine. The nearer we can come to it the better for the health of all concerned. I like them made in squares rather than in long towels; then one can be folded thick and placed inside the other, doubled diagonally in such a way as to do the most service. These should never be too thick

and heavy, or drawn too tight around the body. Some careful mothers use three nursery pins for fastening them. Very small nursery (or "safety") pins can be obtained in boxes, and these only are safe for use in a baby's clothing.

Dainty white lined bibs to button around the neck, are needed if baby vomits or drools, and are neat and useful in any case.

Washing Dishes.

Some one inquires about a rack for drying the dishes. I have never seen a better arrangement than one of my friends used to have in her sink.

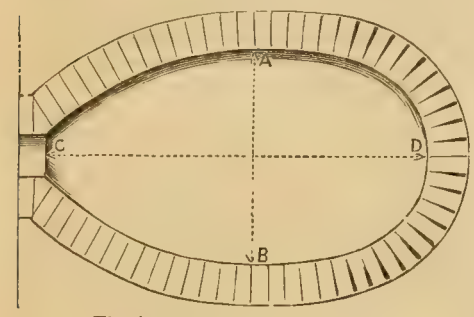


Fig. 1.—GROUND PLAN OF OVEN.

The sink extended across one end of a narrow "cook room," my friend preferring, like some others, a room for her cook-stove too small to serve also as a dining-room, so that she could find room in her house for a separate and distinct dining-room. The sink was in the end of the cook-room next to the pantry, which opened from the dining-room by a door close by the entrance to the dining-room from the cook-room. In the partition between the pantry and cook-room, over the back of the sink, was a sliding door or window, through which the dishes were passed to a shelf in the pantry as fast as they were dried. At one end of the sink was the cistern pump, upon a shelf level with the top edge of the sink. Across the other end of the long sink was the dish rack, which was made to turn up against the wall by hinges, when not in use. It was simply a wooden rack made of narrow slats nailed to cleats, having spaces between about an inch wide, so that plates and saucers could be stuck in by their edges, while cups and bowls and other deep dishes could be turned down upon the rack. Such a rack would hardly obviate the necessity for

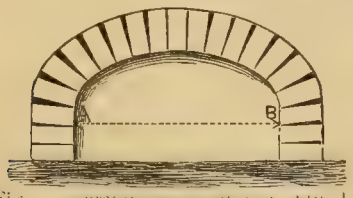


Fig. 2.—SECTION THROUGH A, B, FIG. 1.

wiping dishes at all, but it would make that task lighter and less disagreeable. Of course the dishes should first be rinsed in clean hot water. Nothing but perfectly clean water will dry upon the dishes without leaving spots and streaks.

I have never had such a rack or such a sink, but I dislike greatly to wipe dishes that have not been drained from clear hot water. Yet I seldom see any one wash and wipe dishes in my way. Usually the dishes are washed in suds, and then are either passed immediately through hot water and wiped by an assistant, or they are piled up and afterwards are turned *down* in a dish-pan as though to drain them, and hot water is poured over them, (over their backs), after which each is taken from the rinsing water and immediately wiped without previous draining. In either case the wiping cloth is made quite wet, and sometimes two or three are needed for the operation. I think it is a saving of labor, on the whole, to drain the dishes, though one has to use a common dish-pan for it, as I do. There is no other comfortable process if children do the work. A little girl, six years old, washes and wipes all of my breakfast dishes this summer, and usually wipes the dinner dishes for me. She kneels in a chair at the dish-table, and does her work very satisfactorily. I first wash the pans and stone or iron dishes, all of the big, awkward, or very sticky utensils, and my rinsing water serves as her dish water. I get the work all ready for her, placing the plates in the bottom of the dish-pan, with saucers, cups, etc., at the top, and knives, forks, and spoons stuck in around the sides. When I call her to the work, she finds these dishes soaking in warm water, with a clean orderly table to pile them upon as she washes them. Sometimes I get the rinsing water for her from the stove reservoir, but if I am busy she gets it herself if able to empty the big dish-pan of the dish water. This big pan is used for draining the dishes, after being wiped out clean with the dish-cloth. The rinsing water is in another pan, and the washed dishes are run through it, cups first, then bowls, saucers, plates, etc., and all are turned down to drain in the dish-pan. They dry very fast, and the wiping cloth is scarcely damp when the work is done. Some good house-keepers wipe the dishes directly from the first suds, but that never seems to me a clean way of doing.

"I always scald my dishes," boasts one, but I happen to know that her dishes are usually streaked or sticky when put upon the shelves, because she "scalds" them in such an absurd manner, turning them all *down* in her pan, and pouring hot water over the backs of the dishes, leaving the faces of the plates and other dishes unrinsed, while the heating they get from the hot water on their backs dries the suds or greasy dish water in streaks, which do not all wipe off—and so the wiping towels get quickly soiled.

Material for Pies.

It is amusing to see how many things, and what odd things, are made into pies, by people who have

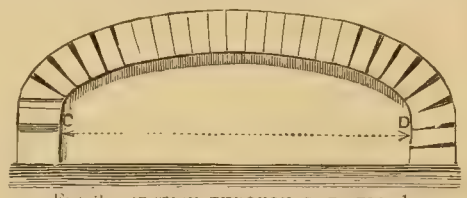


Fig. 3.—SECTION THROUGH C, D, FIG. 1.

been brought up in parts of the country where pie is king of cookery. The strangest material I can think of at the moment is—Night-shade berries! These have actually been used by our neighbors, and I have not heard of any fatal result. It was not the "Deadly Night-shade," (*Atropa*), but the "Black," (*Solanum nigrum*), a near relative of the common potato. I suppose its dark berries look pie-suggestive, but there cannot be any other virtue in them. It seems about as absurd to use elder berries, which have to be "doctored" a considerable to make them delude people into the belief that they are good. Then we have mock-mince pies, made somehow of green tomatoes. I wouldn't give the recipes for these things if I could. The ripe tomato-pie, however, is quite palatable — made by using the tomato like other fruit, slicing it, ripe and raw, into the pie, and seasoning it "to taste." I have never made one, but I have cheerfully assisted at the eating of more than one.

But what is the use of making pies of things that are good enough without any such preparation? It is spending our strength for nought. I only pity my neighbor who values strawberries chiefly as pie material, and I would rather have a good peach in my hand than baked between pie crusts, and I can't imagine a musk melon improved (as some think) by serving it up in a pie.

They tell of bean pies, too—pies made of beans cooked very soft and sifted and seasoned and baked like pumpkin pies. I shouldn't wonder if they are good, as certainly the pumpkin pie, well made, is almost universally liked. Pumpkins and beans have to be cooked somehow before they can serve us as food—not so our apples, peaches, melons and berries. Good fruit may make good pies, however; but if we are to win our way back to Paradise through simplified living, we must learn to eat our fruit with simple bread and butter, adding, perhaps, a little sugar or cream. To make pies of material which is not at all nutritious, and which is even injurious, is, to my notion, a very needless performance.—[We hope no one will be induced to try Nightshade berries as food in any form. There are cases recorded in which children have been poisoned by eating them, and though the heat of cooking may destroy the poisonous principle, it is better not to run any risks. Such different accounts are given of the plant, that it is probably very variable, and consequently treacherous, and to be let alone.—ED.]

How to Build an Oven and Smoke-house.

The old-fashioned brick oven is still a favorite with many housekeepers, who enjoy the peculiarly sweet, agreeable flavor of the bread which is baked upon the brick hearth. The cast-iron stove which is an excellent substitute when the old-fashioned oven is not to be had, permits some of the gases produced in the combustion of the fuel to escape into the oven, and they to some extent flavor the bread or pastry. The ease with which exactly the proper temperature can be maintained in a brick oven, and the consequent absence of all danger of burning the contents is another of its advantages. We suppose it is on these accounts that of late so many inquiries have come to us for a plan of building a brick oven, simple enough to enable any ordinary brick-layer to construct one.

The bricks chosen for an oven should be hard, well burned, well molded, and with straight edges. This is especially necessary for the hearth. The oven should be located as near the kitchen as possible. If it can be built in the kitchen-wall so that the body of the oven forms an addition at the rear of the kitchen, or in a separate part which could be used as a baking or washing room, it would be more convenient for winter use. But an oven and smoke-house can be built together very conveniently and economically, and in this case it is best

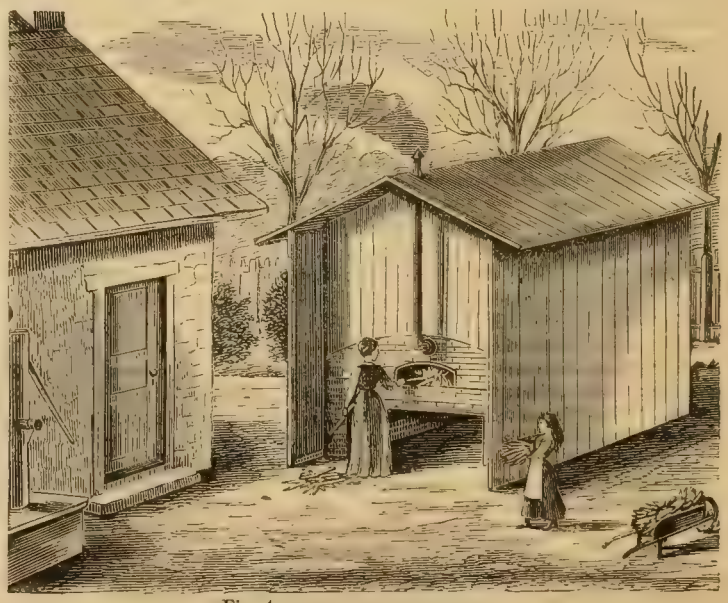


Fig. 4.—THE OVEN COMPLETED.

to have it detached from the house and yet so near to the kitchen door that it may be easily reached. The foundation of the oven is made by building two nine-inch walls of the proper length or about six feet, and six feet apart to a hight of two feet above the ground. Upon these walls are laid cross-

pieces of four-inch oak plank or flatted timber made somewhat like railroad ties. These lie on the wall for the length of half a brick, so that a course of half bricks or whole bricks laid lengthwise may be built to enclose them. At the front an iron bar may be built into the wall and the front course of bricks laid upon it. The spaces between the timbers are filled with mortar and a layer of mortar at

Fig. 5.—RAKE FOR CLEANING OVEN.

least an inch thick is laid upon them. Dry sand is thrown upon the mortar, and the whole bed is beaten with a mallet until it is made hard and compact. Dry sifted coal or wood ashes or sand is then laid upon this bed to a depth of six inches and smoothed down. Upon this non-conducting floor the oven hearth is laid down. The best, smoothest, and hardest bricks are chosen for this. The bricks are laid very evenly and closely together, with mortar, in which a good proportion of wood ashes is mingled. When the floor is laid, the walls are built in the same manner with bricks placed endwise from the inside to the outside, and the oven is shaped as in fig. 1. When the walls are about a foot high, the frames for the center are laid in their proper places. These are cut out of common inch boards of the shape to fit the arched roof. Fig. 2 represents the usual form of the cross-section of the oven in the center, or from *a* to *b* in fig. 1, and these center boards should be of the same shape. The rise of the arch is about 8 inches, giving a total hight in the middle of the oven of 20 inches, and 12 inches at the sides. The boards should be cut in two through the middle, and lightly tacked together, so that they can be easily

Fig. 6.—PEEL, OR SHOVEL FOR OVEN.

knocked apart when the arch is dry, and removed from the door. There will be four of these boards needed, two for the middle and one for each end. The end ones should be a little narrower than the others, so as to form the arch lengthwise, as seen in fig. 3, which is the section through the oven from end to end, as from *c* to *d* in fig. 1. Lath are tacked lightly on to the upper edges of these boards to sustain the roof of the oven, and this is laid as carefully as possible, taking pains to fill the spaces between the bricks caused by the curving of the arch, with solid material, as slivers of brick clipped off for the purpose. The wall around the oven and the arched roof should be well bonded together, and brick-work should be laid around the outside of the top of the arch, so as to make the connection between the walls and arch firm and solid. The inside of the oven will then consist of a solid nine-inch wall of brick laid with the ends toward the middle of the oven, or nearly so. This will serve to retain the heat a long time, and will make a very serviceable oven. The outside wall should be carried a few inches above the line of the top of the oven, and dry sand should be thrown in the space to level it off. A plank floor may then be laid across the top, which may serve for the floor of part of the smoke-house above. If no smoke-house is desired an open roof may be placed over the oven which should project a few feet in front so as to give ample protection. Fig. 4 shows the oven when complete. The rear of the open space below should be built up with brick or closed with boards. The form of the door of the oven is seen in this illustration, and a square opening above (shown at *a* in fig. 3) is for the escape of the smoke. This may be made to communicate with a piece of stove-pipe to carry the smoke off above the roof, or a chimney may be built for this purpose. The doors to these openings may be of wood lined with sheet-iron or tin.

The rake by which the oven is cleared of embers and ashes, is shown at fig. 5. The head of this rake is made of strong iron as it needs to be used sometimes to stir up the fire. The shovel by which the bread is put into the oven and withdrawn when done, is shown at fig. 6. It is made of light wood as it is not exposed to any destructive heat. For those who do not know the manner of using these ovens, we would explain that they are heated by means of finely split dry wood, which makes little smoke in burning and no soot, but much heat. White birch, soft maple, hard maple, hickory, and willow are the woods preferred. The fuel is kindled on the hearth and allowed to burn down to clear coals. When the oven is hot enough, which may be in half an hour to an hour, the floor is cleared out to receive the bread. After the bread is baked, the oven is just right for pies, and after them for drying fruit. If a smoke-house is wanted, this may be built as shown in fig. 8. It should be somewhat larger than the oven to give room for the steps to reach the upper floor. The floor is of earth, and the fire may be made upon one or both sides of the steps. The bars upon which the hams and other meats are hung, lie upon the plates which support the roof. They may be round or square, and it will be found very convenient if the hooks are made so as to slide upon these bars. The hooks may be made of common nail-rod, which is easily bent in the shape seen in fig. 7. The hams are readily hung upon these or hooks, or taken down by having a looped string tied around the hook.

Fig 7. HOOK.

Cooking Some Things we Like.

During these many years past we have published several thousand suggestions, recipes, etc., about preparing food. A large number of these have been tried at home, with the object of testing them for the benefit of our great *American Agriculturist Family*, and in this respect the home kitchen has often been a sort of culinary "Experiment Station." From this mass of experiments, we have some articles of food and modes of cooking that have become standard, because they are generally liked, and frequently prepared, as for example:

Pressed Beef Improved.—This may be made of fresh beef, or corned beef well soaked to free it of all excess of salt not needed for seasoning. The coarser, cheaper portions of fresh beef may be used to advantage. Put the meat in the pot or kettle with water enough to cover it. Set over the kettle a milk-pan, or other close fitting tin dish, containing water. The steam will condense on the underside of the pan, and drip back into the kettle, carrying with it the aroma and flavor of the meat, which would otherwise escape in the steam. The water will not boil away if the heat be only sufficient (212°), to simply boil the water gently. ☞ *Keep the meat cooking until it is so tender that it will fall to pieces, and the bones drop out.* Some tough pieces may require many hours, *but cook it tender.*—Then take out the meat, remove the bones, and mix it, fat and lean, in a deep basin, pan, or other dish. Skim the remaining liquor of any floating fat, and simmer it down to a gravy consistency, not very thick, being careful not to scorch it. Pour this among the meat, put over it a plate or round pie tin that will fit the dish, and put on 15 or 20 lbs. weight of stones, flat-irons, or other articles, and set aside to cool. The gelatine in the gravy will harden, and you will have a solid mass, marbled in appearance if there is a mixture of meat, fat and lean, or of different colors. This can then be cut in thin slices, is delicious to eat, and easy to digest if there be not too much fat meat. In cool weather, or in a cool place, it will keep several days, and is a very handy resort. Now for the IMPROVEMENT. For each 3 or 4 lbs. of meat, take a tablespoonful of "Cooper's Gelatine," (or other good prepared gelatine), dissolve it in a little hot water, and stir it into the liquid just before pouring it over the boiled meat. This will give increased firmness to the cold mass, and make up for defective boiling down of the liquid. The meat when inverted upon the serving platter for the table, has a smooth exterior of the exact form of the pressing dish. It may be garnished by placing in the bottom of the dish before putting in the meat, some hard-boiled eggs cut in halves and set yolk up.

Chicken, Turkey, and other meats, to be cooked and pressed similarly to the above, will be much improved by the addition of gelatine.

Corn-Starch Cake.—This is a simple and digestible cake, easily and quickly made, and generally liked. Rub well together 1 cup of butter and 2 cups of sugar. Add the white of six eggs beaten to a froth. Stir in 1 cup of sweet milk, 2 cups of flour, in which have been thoroughly mixed 2 teaspoonfuls of baking powder or 2 of cream of tartar and 1 of soda, and flavor with 1 teaspoonful of extract of bitter almonds (or other flavor desired). Lastly, stir in 1 cup of corn-starch, which acts both as food and shortening. Immediately bake in a moderately quick oven.

Queen of Puddings.—A simple, easily digestible, and (to our taste) a very palatable dessert. Beat the yolks of three to five eggs, and mix in a quart of milk with sugar to the taste (about a teacupful). Flavor with vanilla or otherwise, and pour this over a pint of fine bread-crumbs in the pudding-dish. Bake to a light brown; remove from the oven, and while hot pour over it the whites of the eggs beaten to a froth, with ¾ to 1 cup of sugar. Replace in the oven leaving the door open, and bake to a delicate brown. Some like jelly spread over the pudding before adding the frosting.

Corn Fritters.—Grate a dozen ears of sweet green corn, (uncooked), add 1 teaspoonful of salt, ½ teaspoonful of fine ground black pepper, 1 egg beaten with 2 tablespoonfuls of flour. Make into small cakes and fry in hot butter or lard.

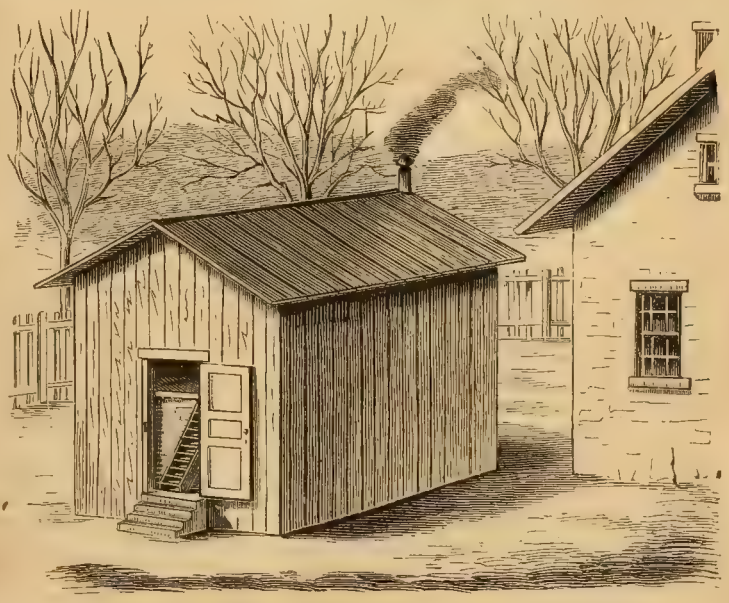


Fig. 8.—REAR VIEW OF COMBINED OVEN AND SMOKE-HOUSE.

BOYS & GIRLS' COLUMNS.

October.

Last month we told you that we had come to the months with names from their numbers; as that was the seventh month, so this was the eighth month of the old Roman year, which we told you began with March. *Octo* is the Latin for eight. There is nothing of special historical interest connected with the month, but it is one in which boys and girls make history very fast. We said last summer that June was the youngster's month; we were a little hasty in saying this. It should by all means have been October. Now come the perfect days, now the gorgeous colors, now that wonderful stillness in the woods, when you can hear a nut drop. Nuts and nutting! We said that you youngsters made history this month, and when you boys and girls get older, you will look back on some Saturday this October, as one of the happiest in the history of your lives. It is not a history that will be down in books, and no one else will read what is written in your memory. But these October days, their sights, sounds, and even odors, the words, smiles, and little kindnesses, these when you are older will, when you least expect them, all come back with a strange freshness.

No. 446. Puzzle Picture.—You see the sea—you can't miss that; but you are to see a Miss. She

may be going to sea; she may be waiting along the shore. She's quite young, but of a most uncertain age, as you will find her over nine and under eleven.

Answers to Correspondents.

BY THE DOCTOR.

A LITTLE LAME GIRL.—Her name is Bell, and she lives in a log house near Lake Memphramagog. Do you know where that is? some perhaps will say it is in Canada, and others that it is in Vermont, and both will be in part right, for the lake is about half in each. Little Bell is only 10 years old, and she writes a very pleasant letter to The Doctor. The dear little child says she has always been lame, but she does not let that prevent her from using her eyes, and she says "I look around and see all I can."—She sent me an insect she found on the door-step, but it was so broken in pieces by the mail, that I can not make out what it is. She writes: "I have a splendid dog, and his name is Rover. I have three cats, and the prettiest one has two kittens; the old cat is black and white, and so are the kittens."—Enjoy your pets my little one, and every one in our great family of boys and girls will join with me in wishing you much happiness.

A KENTUCKY BOY USES HIS EYES.—Here is a very clever letter from Charles Martin, who lives in Kentucky. Charlie is only 11 years old, and I let him tell his story in his own words. He says: "I have concluded to write and tell you what I have seen. I have a very kind Pa, who built an aquarium for the pleasure of us children, and while my little brother and myself were playing around it the other day, we found a cricket which we threw into the water. We soon saw two horse-hair worms, which appeared to come from the cricket, and when we had told our Pa of them he told us where to look in the *Agriculturist* for your letter on the subject. We had often heard of horse-hair snakes, and that horse-hairs turned to snakes, and had seen the worms, but we never knew how they came until we saw those, and read your letter. They were quite a curiosity for brother and me; we saw the worms laying the eggs of which you speak; they came out of the worm looking like a white thread several inches long, we put this thread-looking thing under the microscope, and could not see anything in it that looked like eggs, until we burst open the shell or skin, by squeezing it between two glasses, then we saw hundreds of roundish looking things, that we supposed were the eggs, and this thready looking thing appeared to have been stuffed with the eggs like a sausage skin.

BIRDS AS PETS.—Charlie S., in Venango County, Pa., wishes me to tell him how to catch humming birds and crows to tame as pets. There are some birds which seem to enjoy life in confinement, and not only become tame, but so attached to those who have the care of them that they will not go away when allowed their liberty. Then there are other birds which will not live in a cage, but mope and pine away when deprived of liberty, and others which, while they will live, never become contented, but always appear like prisoners on the lookout for a chance to escape. However it may be with other birds, I do not think it right to shut up those of either of these two kinds. Indeed I am not sure that it is best to shut up any of our native birds at all. Those who keep cage birds say that they are much better off, as they are not shot at by overgrown boys or hunted by hawks, owls, and other enemies. I will not talk about the right and wrong of the matter now, but only say that from a selfish view of the matter the birds should be free, as they can then serve us much better than when caged. There are but few birds which do not at some time in their lives feed upon insects, and every farm in the country needs many times more birds than it now has, to kill the injurious insects—so for our own good we should neither kill nor shut up the birds. But to answer Charlie's question we must say something about the habits of

HUMMING-BIRDS.—Though so beautiful and so small, the humming-bird, (for but one is common in the northern states), is one of the most quarrelsome of all birds, and as full of fight as a game fowl. As with passionate boys, the humming-bird's disposition often gets it into trouble. Did you ever see one of its nests? It is a cunning affair, usually on the upper side of the limb of an apple tree; it is only about an inch and a half across, lined with soft down, and so covered on the outside with lichens, (some call them mosses), that you might hunt for a long time without finding it, as it appears much like an old knot upon the tree. Whenever a person comes near the nest, the birds immediately show fight and attack him. It seems rather foolish of the little things, after taking so much pains to hide the nest, to get into a passion and let the secret out. The nests are rarely found in any other way, and when thus discovered the young birds when about ready to fly have been taken. I never knew the old birds to be taken in but one way; I have known several of them to be caught which had flown into a room or greenhouse where there were flowers in bloom, and by quickly shutting the windows the little birds were captured. I never knew one to live long after being taken, but have read accounts of those which have been kept several months, but they are warm weather birds, and die on the approach of winter in spite of all care. As so many have failed in trying to keep them, I do not think my young friend need feel very sorry that they are so difficult to catch. It is much pleasanter to see them about the flowers, with their beautiful plumage glittering in the sun, than to shut up the impatient little things. Most persons think that they visit the flowers for the honey, and they probably do eat some of it, but their chief food is insects, which are attracted to the flowers by the sweet liquid many of them contain. As these birds fear cold weather, you will probably wonder how they pass the winter. They go south. In September, when the young birds get strong, they all, parents and young, start on their long journey towards a warmer part of the country. Isn't it wonderful that these tiny things will go on and on for hundreds of miles! There is some reason for thinking that either the old or the young ones come back to the same place the next season, as a nest has been known to be occupied three seasons, one after another. But I have given so much space to humming-birds I have little room left for

THE CROW, which can only be tamed by being taken from the nest before it can fly; then it must be brought up by hand until quite able to feed itself, and this is more of a job than most people care for. Young Jim Crow is a great eater, and wants his food very often, at least every hour or two, or he will begin to cry for it. Something is said on another page about the taming of crows by young Indians: they will do well enough as pets for them, but if you have any regard for the comfort of your family or that of your neighbors, you had better pet something else. I had one once, and did not know before how much trouble such a solemn-looking individual could make.

"PENNY" AND NAILS.—"H. S. M.," wonders why nails are called four-penny, six-penny, etc., to describe their sizes. It is said to be from the old English way of reckoning the sizes, the "penny" being used instead of pound. Four-penny nails were such as weighed 4 lbs. to the 1,000; ten-penny were 10 lbs. to the 1,000, and so on.

What do You Call Your Father?

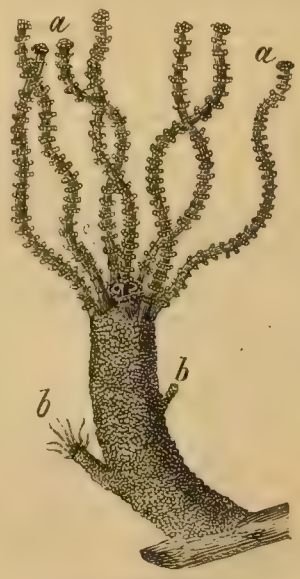
"The old man won't let me go."—"Pshaw! my gov'ner 'll let *me* go."—"Well, I havent said anything to my pop about it."—Such talk among boys is very common. When boys get to be of a certain age—from 12 to 16—they seem to think it manly, in speaking of their fathers to other boys, to use some slang word. We hear "Old Man," "Dad," "Old Squaretoes," "Pop," "Governor," or "Gov.," instead of father, one of the best, and which should be—next to mother—the dearest of names. This nicknaming is not by any means confined to rude and rough boys, but unfortunately prevails among those who have been well brought up, properly educated, and have pleasant homes. It would be sad indeed, if these names were used to express disrespect, or contempt, but they are heard, and more's the pity, from the lips of those boys who really love their fathers, and would at once resent it if anything disrespectful were said of them. Not one of the boys who is in the habit of speaking of his father by a slang name, would go to him and say "Old man, won't you please" do this or that, or say "Good-night, pop." It is a very safe rule never to speak *of* your father—or in fact any one else—by any name you would not use in speaking *to* him. The good old Saxon name father, is not only a pleasing word, but it is appropriate at all ages, whether from the tiny child or the full grown man. Boys, don't use slang at all, but especially not when you mean Father.

The Hydra, and How it Lives.

BY MRS. MARY TREAT.

The Hydra is an animal low in the scale of being, as compared with some of the other minute animals. By this is meant, that it has but very few parts, and these are very simple. We may say that the Hydra is all stomach and arms, for though we speak of it as having a body, this is nothing more than a bag or sac, which is both stomach and body; this is usually fastened by one end to some object, and at the other end is a hole which is the mouth; around this are several arms, or *tentacles*, of the same material as the body, with little wart-like projections scattered along their whole length. We will see the use of these little wart-like bodies further along. The animal can withdraw or extend these arms at pleasure, and the creature has the power of distending its stomach to an astonishing size, for so small an animal.

The kind of Hydra here figured is common in fresh water ponds, among growing plants, and even in ditches by the roadsides, but it is so small that we cannot easily see it with the naked eye; so the best way to capture it, is to take a wide-mouthed bottle and fill it with water and some of the plants from the pond or ditch. We now take the vial home, and set it aside where it will not be



HYDRA—MAGNIFIED.
a, a, arms or tentacles; *b, b*, buds; *c*, mouth.

disturbed for a few hours. After giving time for the strange animals to make themselves at home, we take the vial and hold it up to the light, and if we have caught any Hydras, by looking carefully, we may see them clinging to the side of the vial, or hanging head downward from some little spray of plant. To see the little animal properly, it must be magnified; a hand-glass will help, but the best view is had by the aid of the microscope. The engraving shows the Hydra largely magnified.

It is a slow, sluggish fellow, too lazy to pursue its prey, and so it fixes the extremity of its body in a suction-like

way to some plant or whatever it happens to come across, throws out its long arms and waits for prey. It reminds me of a lazy fisherman, who fixes himself in a comfortable position, and then throws out several lines to tempt the sprightly little fishes. But the lazy fisherman, as well as the Hydra, makes a very uncertain living, for not always are the fishes to be tempted by the bait, and the lively little creatures for which the Hydra is fishing, seem to be on the alert, and so both fisherman and Hydra are often obliged to take in their lines without having caught their suppers. But when the Hydra has good luck—when some poor creature runs against one of the long arms—it is immediately seized by the arm, and then the other arms are wound around it, and it is forced down the gaping mouth into the bag-like stomach—actually swallowed alive; under the microscope we can see the little captive through the transparent walls of the stomach, moving about, until a film gathers around it, gradually hiding it from sight, until the whole is lost to view.

Sometimes the animal slips out of its long arms, and escapes from the Hydra, but if it happens to be an animal with a soft body—no shelly covering to protect it—it soon dies. Those little wart-like prominences on the arms are the receptacles of poison darts, which the Hydra thrusts into its victim; these paralyze and soon kill it.

The Hydras increase in a funny way; little bud-like knobs start out anywhere on the body of the parent, and these are the young Hydras just beginning to grow; after a short time, arms are developed on the little ones, and they begin to catch their own food while still fast to the parent. After a while, when the young have become old enough, they break away from the parent, and swim about, and at length attach themselves to whatever they please, and spreading out their fishing-lines, catch their prey, and raise families in the same way their parents did before them.

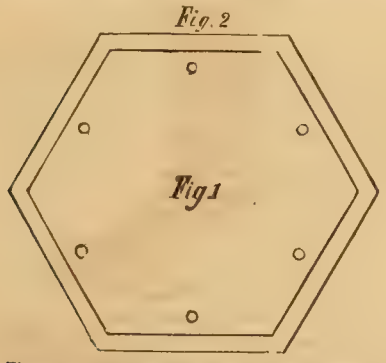
Aunt Sue's Chats.

ISAIAH S.—The letters for the alphabetical arithmetic, when placed in order from one to nought (or ten), form a word or sentence; and as a puzzle one may sometimes discover the "*key*," anagramatically, when he is not able to work out the sum.

EDDIE F. G. asks why Boston is called "the Hub." It was the name Dr. Holmes gave it, when he facetiously suggested that the whole of Creation turned on its axis. I can give you the "nicknames" of several other cities, which names suggest "their origin" New York is called Gotham; Philadelphia, the Quaker City; Baltimore, the Monumental City; New Orleans, the Crescent City; Washington, the City of Magnificent Distances; Cincinnati, the Queen City (or jocularly Porkopolis); New Haven, the Elm City; Detroit, the City of the Straits; Chicago, the Garden City; Pittsburgh, the Smoky City; Cleveland, the Forest City; Indianopolis, the Railroad City; St. Louis, the Mound City; Louisville, the Falls City; Keokuk, the Gate City; Brooklyn, the City of Churches.

M. L. E.—"The difference between cashmere and merino" is simply—that merino is twilled on both sides and cashmere on only one.

CLARA L. wants the "pattern of a pretty, cheap, easily-made card-basket." I think I can suit you exactly, Clara. Cut two hexagons out of white card-board; one a little larger than the other, as shown in figs. 1 and 2. Paste them together, one on top of the other. Cut a little hole with a



Figs. 1 and 2.—BOTTOM OF CARD-BASKET.

punch, in the centre of each side of the base, as in the pattern, and place it under a weight to dry, while you cut out six pieces like fig. 3. These pieces you may paint, or "spatter," (with ferns, etc.) or decorate in any manner you choose. Then tie it all together with narrow ribbon, leaving the bows *outside* at the *bottom* of the basket, and *inside* at the *top*. If that is not simple enough, you can cut the six pieces of the shape of fig. 4, stick fancy paper on it, bind it with ribbon, and *sew* the sides together, and the base (fig. 1), which must also be bound with narrow ribbon. You can vary the style of ornamentation, according to "your own sweet will."—[The pattern given

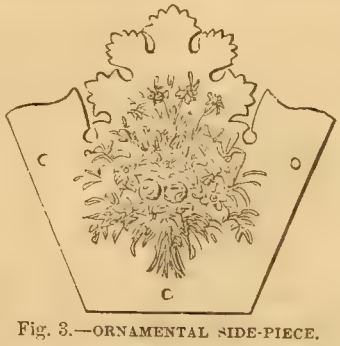


Fig. 3.—ORNAMENTAL SIDE-PIECE.

here is just half the proper size; Aunt Sue sent her drawing the full size, but it takes up more room than we

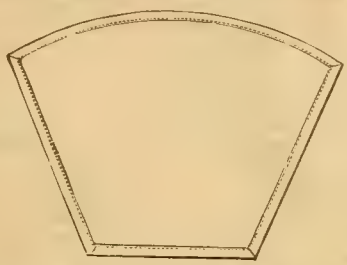


Fig. 4.—PLAIN SIDE-PIECE.

could spare; you can easily draw a pattern just twice the size given here, upon a piece of paper, to serve as a guide.—ED.]

ENGLISH GIRL.—To the best of my knowledge and belief, "Queen Victoria's crown" contains 1 large sapphire and 16 smaller ones, 11 emeralds, 1 large ruby and 4 smaller ones, 1,364 brilliants, 277 pearls, 1,273 rose diamonds, and 147 other diamonds. It was made in 1838, principally with jewels taken from old crowns.

MUSHROOMS.—A little girl (whose letter is not at hand) wishes to know how to tell mushrooms from toad stools. This is a difficult matter to tell, but a very easy one to show. The editors inform me that they expect soon to have something on the subject for the old folks, and she will be perhaps able to learn something from that.

More about Cats.

A kind lady in Wisconsin sends you this:—The story in the August *Agriculturist* about the kitten and the doll, reminds me of a kitten I had when a little girl. A neighbor gave me a little gray and white kitten, and shortly after another neighbor had the misfortune to lose in one night an old hen and her entire brood, save one poor little chick; that one she gave to me. The pets were soon on the best of terms. When chick got old enough to use her wings a little, the two would have great sport. Chick would go round and round the house as fast as her legs aided by outstretched wings could carry her, with kitty close to her heels; when he caught her, they would have a rough and tumble play for a while, and then another race. When tired of out-door sports, kitty would get on his bed and chick would fly up and nestle down close to him; kitty would wash her feathers, cat fashion, and when she was all cleaned up nicely, they would sleep, kitty's paws encircling chick's neck. Kitty would never hurt her, though he often pretended he was going to bite her. Chick, when she had grown to be a hen, never forgot sleeping with kit, for, as long as she lived, she delighted to steal into the house and make a nest in some corner on a lot of rags, nor would she scruple to get upon the bed if allowed.

Though many cats are of a roving disposition, all are not, for some of them have a great love for home. I will tell you of what happened to one of the pioneers of Wisconsin. When the state was first settled, cats were scarce and mice plenty, and people would take a great deal of trouble to obtain a cat. One family which was moving into the state, while on the way, procured an old cat and two kittens. The family traveled twenty miles from the place where they got the cat and kittens, and camped for the night, for there were then no railroads or hotels; when they arose in the morning, they found pussy had deserted with her two babies. Great was the surprise of her former owner, to find that on the second day after their departure puss and her babies were safe in their old quarters. As puss could carry but one kitten at a time, she must have traveled the entire twenty miles three times over, besides hunting her food; she doubtless carried one for some distance, and leaving it in a safe place, returned and brought up the other one, and by thus going back and forth, they at last all reached their old home. That cat had no idea of being a pioneer.

Aunt Sue's Puzzle-Box.

POSITIVES AND COMPARATIVES.

(*Example.*—Lick, liquor.)

1. An animal, a rope. 2. Part of the body, a beverage. 3. A spice, a flower. 4. An exclamation, a margin. 5. A sanctuary, a poet. 6. An exclamation, a propeller. 7. A vegetable, a nook. 8. An exclamation, an element.

BESSIE.

NUMERICAL ENIGMAS.

1. I am composed of 26 letters:
   My 17, 1, 10, is an article of clothing.
   My 10, 2, 18, 26, 16, 4, 13, is a kind of support.
   My 9, 22, is an adverb.
   My 17, 11, 7, 3, 19, 9, 15, is a girl's name.
   My 5, 15, 25, 20, 11, is used on the plains.
   My 14, 21, 24, 23, 13, is an imaginary being.
   My 8, 12, 1, 16, is an insect.
   My whole is an old, well-known proverb. L. S. H.
2. I am composed of 24 letters:
   My 16, 12, 24, is a weapon.
   My 11, 13, 12, 20, one likes to be during a storm.
   My 23, 3, 19, 21, 10, 7, is astonishing.
   My 9, 14, 24, 4, is a suggestion.
   My 5, 17, 18, 15, 8, is to raise.
   My 2, 22, 1, is a nickname and a crime.
   My 2, 22, 1, 6, is an article of clothing.
   My whole is a message which effected a reconciliation between two men who had quarreled in the morning. ADDIE.

DOUBLE ACROSTIC.

1. To architects a name well known,
   In books on architecture shown.
2. A word that leads to all success;
   If you would know it, do no less.
3. When in the darkest ways we glide,
   This is a safe and certain guide.
4. One from whose lips each zealous word
   By eager patriots was heard.
5. A plant imperfect, not complete
   In all that we with pleasure greet.
6. In climbing upward as we rise,
   What forms our steps t'wards azure skies?
   Primals—finals name a book
   For which most others we forsook. HENRY.

NAMES OF RIVERS, ETC.—ENIGMATICALLY EXPRESSED.

1. A variety of grapes. 2. What a tree cannot live without. 3. Suggestion of an African Chief. 4. What a miser does, and a girl's name. 5. The first Bishop of Jerusalem. 6. A domestic animal and where she feeds. 7. A relative and an animal. MARY E. S.

DIAMOND PUZZLE.

1. A vowel. 2. To place. 3. A fright. 4. A lover of children. 5. To go out. 6. Necessary to playing billiards. 7. A vowel. LITTLE ONE.

CHARACTERISTIC INITIALS.

(*Example.*—"*C*ultivated *S*tatesman"—*C*harles *S*umner.)

1. Just, Good and Wise. 2. Writes Cultivated Books. 3. Safe Counsellor. 4. Mighty Artist. 5. Daring Orator. 6. Bold Traveller. 7. Always Lamented. 8. Temperance Story Teller. 9. Graceful Genius. 10. Every Day Ever New Stories. M. P.

CROSS WORD.

My first is in parch but not in dry,
My next is in head but not in eye,
My third is in wheat but not in hay,
My fourth is in river but not in bay,
My fifth is in pelf but not in gold,
My sixth is in rude but not in bold,
My seventh is in light but not in day,
My eighth is in June but not in May,
My ninth is in stone but not in rock,
My tenth is in clasp but not in lock,
My eleventh is in slow but not in late,
My whole is what all should cultivate. MAMIE.

PI.

Noe fo het stom tropimtan lures fo het sceneic fo annrems, si na tomsal aubstole license ni grader ot rousefly.

ANSWERS TO PUZZLES IN THE AUGUST NUMBER.

ANAGRAMS OF FAMOUS BATTLES.—1. Marston Moor. 2. Marathon. 3. Sebastopol. 4. Culloden. 5. Bunker Hill. 6. Austerlitz. 7. Solferino. 8. Cowpens.

NUMERICAL ENIGMAS.—1. Skating. 2. Benjamin Franklin.

PI.—Economy is the easy chair of old age.

SQUARE WORDS.—1.—NORA / OMEN / REIN / ANNA 2.—HORN / OHIO / RIFT / NOTE

CROSS WORD.—Philadelphia.

CHARADE.—Bismarck (his Mark).

DECAPITATIONS.—1. Gloss, loss. 2. Glove, love. 3. Frock, rock. 4. Flint, lint.

DOUBLE ACROSTIC.—C—ale —B—Cactus, Balsam.
A—meli —A
C—ame —L
T—hame —S
U—tic —A
S—ubstratu—M

HIDDEN GAMES.—1. Whist. 2. Jackstones. 3. Bagatelle. 4. Marbles. 5. Dominoes.

TRANSPOSED APHORISM.—After a storm comes a calm.

Thanks for letters, puzzles, etc., to American Jack, Julia E. G., Little One, L. W. B., Frank M. G., Mary A. E., F. D. K., M. H. H., Allie W., Sam, J. S., Gertie L. B., Lidie S. H., Essie B. M., Kate J. C., Mary E. S., Sphinx, Amanda H., Geo. H. F., and Mrs. M.

I would respectfully suggest to my nieces and nephews that numerical enigmas made upon their own names, or upon the name of one of their friends, are not of sufficiently general interest to be published.

Send communications intended for Aunt Sue to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

YOUNG INDIANS ON THE MOVE.—*Drawn and Engraved for the American Agriculturist*

Pictures of old Indians and their ways are common enough, but we do not often learn much about the Indian boys and girls. Allowing for their different ways of living, young savages are much like civilized youngsters. In one thing, however, they differ from white children. We have seen little Indians of a great many tribes, and never knew one of them to cry. Even the pappooses—which you know are baby Indians, tied to a board or basket-work frame—have better manners than to cry. It may be that they have a little quiet cry when nobody is near, but of the hundreds we have seen, hung up in trees, on their mother's backs, or set anywhere out of the way, we can not recollect that one of them cried. It is not about the babies that we wish to talk just now, but about those of your own age—Indian boys and girls. It may be that some of you in reading stories about the wild free life of the Indians, of their fast horses, and their buffalo hunts, have thought how grand it must be, and may be half wished you could lead such a life. The beauty of it is all in the stories; in reality the life of the savage is a hard one, and he is really a very unpleasant person. Just think that these Indian boys and girls have no proper homes! They have tents, or wigwams, which they move from place to place, but these are very small, and the family huddles together in a very uncomfortable manner; all that belongs to them, their house included, can be packed on a few horses and the backs of women, and taken to another place. When game gets scarce, or there is no grass for their horses, they pack up and go where these things are more abundant; or if they fear the approach of an enemy, for the tribes are often at war, they make a hurried removal, to get the women and children to some safe place. From one cause or another moving day comes very frequently with the Indians, and it is very fortunate that they have no cooking stoves or pianos, or many other things that we consider necessary for proper house-keeping. With us, moving day when it comes, is a great day for the boys and girls, who are as busy with their own matters as the older people are with their's. The dolls' dresses must be packed away, the dolls' furniture must go without scratching; the little tea-set must be packed so that it will not break—Oh! how many things little Miss has to look after; then the bird, and it may be kitty, and above all the dolls, these are to be trusted to no one else; these she must take herself. There is the brother, he has so much to do that he can hardly find time to help his sister, for he finds himself very rich at moving time; the balls, tops, marbles, and all the rest of the toys; that windmill he has been making, and which has been almost finished so long; the shells uncle Thomas brought from sea, and the minerals he collected himself; then the books and ever so many other things, and especially Nero, the dog, all these fall to the boy's share on moving day, and a very busy day it is with him. The Indian boys and girls have none of these things to look after; their principal pets are the puppies; for in some tribes there seem to be more dogs than Indians. The above engraving represents a scene which Mr. Cary saw in the far west, which shows the part the young Indians take when the tribe is on one of its frequent moves. These youngsters have learned not to carry anything themselves that they can pack upon a beast of any kind; the old ones have no mercy upon their horses, but pack them with as large a load as will stay on, and then put a woman or two on top of all; in the same way the youngsters load up the dogs, and make them carry their pets, the puppies, and the crows. Indian boys are very fond of tame crows; they catch the birds when young, and make pets of them, just as some white boys do. We have told you before what mischievous things tame crows are, but among the Indians they can steal but little, and the sly ways of the birds seem to amuse them. You will perhaps wonder why these young Indians do not travel in the road, but you must remember that there are no roads in the unsettled territories, and they are following the course of some river, along in what is called the "bottom lands," or that portion which is overflowed during freshets, and where there is a growth of willows and other tall, slender plants, which form a thicket not so very difficult to get through, and tall enough to hide a party even if on horseback.

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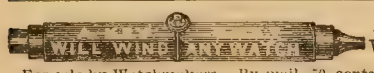

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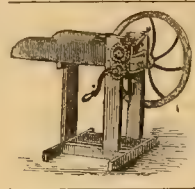

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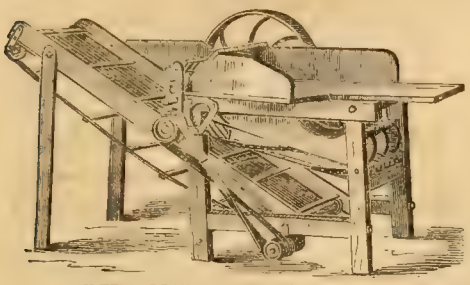

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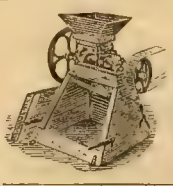

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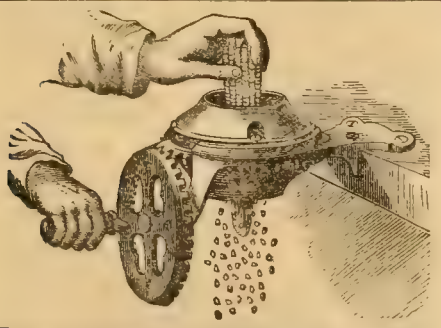

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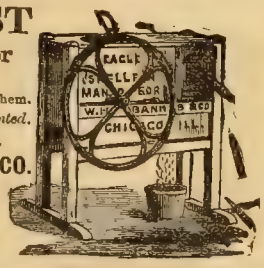

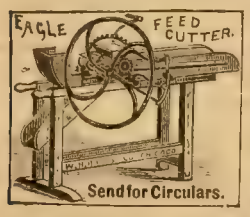

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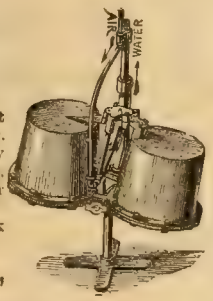

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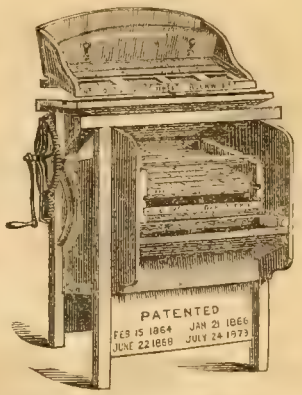

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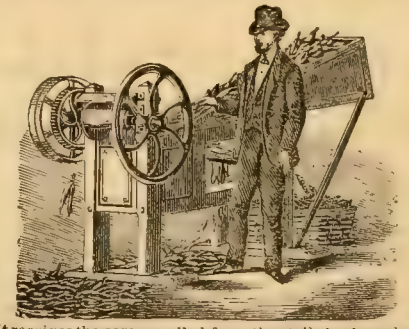

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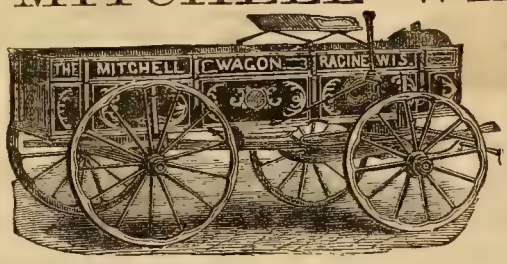

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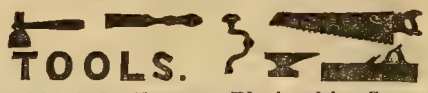

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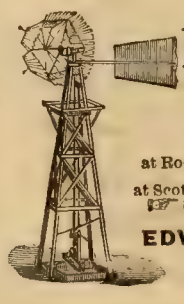

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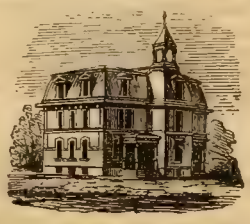

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ORANGE JUDD COMPANY, Publishers, 245 Broadway, New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 371.

Founder in a Horse.—"C. B.," Groton, N. H. Founder consists of inflammation of the laminæ or leaves of the foot—those highly sensitive plates which dovetail into each other, and connect the interior of the foot with the outside and insensitive horny part or hoof. When foundered, the horse will hardly move, throws his weight upon the hind feet, and spreads his fore feet forward as far as possible, to relieve them from weight. The head is thrown up, the horse breathes hard and fast, is highly fevered, and expresses in many ways his distress and suffering. Acute founder may be cured, but always leaves the horse tender in his fore feet, and subject to a repeated attack on the first imprudence in feeding, watering or driving. Chronic founder renders the horse valueless, and a burden to itself and its owner.

Poultry for Eggs and Meat.—"F. H. S.," Chicago, relates his experience as to the best fowls for market and for winter layers. He writes: "I crossed a Brown Leghorn cock to a Dark Brahma hen. This cross produced a splendid bird. And here let me say to those that raise poultry for the market, do not breed those large raw-boned Asiatics, they do not pay. When dressed for the market, they will not bring as much per pound as even the common barn-yard fowl, and, though I admit that their weight will make up the deficiency, they will consume twice as much food to do it. As to food, I give corn-meal, barley, wheat, bran, and oats, mixed and scalded; also once a week chopped liver. The fowls do not get tired of this food, and it is excellent for producing eggs. In winter I keep my poultry in a warm cellar. With good feed, warm housing, and care that too many fowls are not kept on the farm, there is no danger that poultry will not pay."

Manure for Grain.—"E. T. B.," Jewell City, Kansas. A soil rich in vegetable matter, but deficient in mineral constituents, will be apt to produce plenty of foliage and but little grain. What is wanted in this case is lime, superphosphate of lime, wood ashes, or bone dust. In your case it would undoubtedly pay to arrest a portion of the immense quantities of bones which are daily carried from the western parts of the state, and apply them to the soil. They would furnish lime, phosphoric acid, and nitrogen, all indispensable substances for the production of grain, and very rapidly exhausted by grain crops. Unfortunately the vast supply of bones so near at hand, is neglected by western farmers, and allowed to go past their doors, to be profitably used by farmers 3,000 miles away.

Capacity of a Cistern.—"M. L. W.," Selin's Grove, Pa. To find the contents in gallons of a rectangular cistern, multiply the depth and width both ways in feet together, and then multiply this by 7½. The first sum is the cubic feet, and the latter the quantity of gallons contained very nearly. For a circular cistern multiply the diameter by itself, and then by .7854, (or those who do not understand decimal fractions, may take three-fourths of the product). This sum is multiplied by the depth, and the result is cubic feet. Then multiply by 7½ as above.

Merino Sheep and Shepherd Dogs.—"C. H. C.," Chatham Co., Neb. The flock of Merinos bred by Mr. Chamberlin, of Red Hook, Dutchess Co., N. Y., is a very choice one, and is under the care of an excellent shepherd, Mr. Carl Heyne. By stating the sort of ram wanted, you could probably be suited from this flock, without the expense of selecting personally. Probably a shepherd dog could also be procured there.

Sprinkling Hatching Eggs.—"W. S.," Wilson Co., Tenn. For very good reasons it is considered of use to moisten the eggs during the process of hatching. This may be done without any difficulty by sprinkling the nest while the hen is off for feeding; once or twice during the incubation is sufficient.

Cow Pox.—"S. E. C.," Stormont Co., Ont. The teats and udders of cows are liable to various other forms of eruptions, which may be confounded with the true cow pox. The true cow pox may be distinguished by the fevered condition of the animal for three or four days before the eruptions appear. These are at first hard, red spots, about the size of the point of the finger, which

soon enlarge, rise in the center, and in ten days form a pustule, which contains first a clear fluid, but afterwards a thick pus. There is a red ring around the base of the pustule, and it is depressed or sunken at the point or summit. This latter peculiarity is a special characteristic of the disease. The pustule dries up and forms a crust, which in about ten days more is easily removed, leaving a red, shining spot on the skin. The proper treatment is to use a milking tube, to draw off the milk, to keep the sick animals by themselves, and to have separate attendants for them. Unless the stables are thoroughly disinfected by whitewashing with lime, the disease will be apt to reappear every year. It is rarely that this disease is very troublesome in this country or Canada, and good nursing, warmth, and administering half an ounce of *sulphite* of soda daily, during the first stage of ten days, will generally prevent very ill effects. The milk of cows affected with this disease should not be used for food, except for calves and pigs.

"Grub in the Head."—"R. S. F.," Litchfield Co., Conn. It is not probable that the death of your sheep has occurred from grubs in the head. These parasites rarely, if ever, cause death. They annoy the sheep while crawling up the nostrils to the nasal sinuses, where they live quietly until the time for their change to pupæ, when, in crawling down, they again irritate the sheep and cause violent sneezings and stamping with the feet. In all cases of sickness among animals, it is necessary to send a full statement of the symptoms, in order that we may form a judgment of the true cause of the trouble. There is a serious and fatal disorder of the brain caused by a parasite known as hydatid, which is a tape-worm in one state of its development, and is not uncommon. This appears as a watery bladder in the brain, but it is not what is known as "grub in the head."

Poultry and Eggs for Profit.—"J. P. W.," Buffalo, N. Y.—One man out of ten thousand might probably go into the business of raising eggs and poultry for market profitably; but the chances are that every one of the others would fail. It is a business that requires as much tact, patience, practical knowledge, and habits of close and careful observation, as bee-keeping. A suitable place is also needed, and a locality where fresh eggs and spring chickens bring a good price. The knowledge of what is required can come only through experience, and can not be communicated, except with a great deal of detail. That there is profit in the business is certain, but only when the right man goes into it in the right place.

Tomato Catsup.—(When tomato catsup is desired, the following is the best recipe we have yet found, judging from the taste of the many who have tried it along with other varieties.) For four or five quarts of catsup, boil 1 peck of ripe tomatoes 15 minutes without removing the skins, and strain through a sieve. Put into a little bag 1 teaspoonful of whole cloves, 1 tablespoonful each of unground cinnamon, allspice, and black pepper, and put these with 1 pint of good vinegar, into the strained tomatoes, and boil the whole carefully 3 to 5 hours. When sufficiently boiled and condensed, stir in 1 tablespoonful of ground mustard, and 1 teaspoonful of ground Cayenne pepper. Salt to the taste, and keep in well corked bottles.

Double Furrow Plowing.—"B. O. C.," Los Angeles Co., Cal., writes, "On the big farms of this state a man with two pairs of mustangs, (these are the light native horses of the country), and a gang-plow cutting two feet wide will plow 4 acres a day at any time, and often as much as 5 acres per day." Most of the plowing in California is done with gang-plows, and we have not as yet learned half the value of these plows, on suitable soils, in the eastern part of the country. (We recently saw a ¼ acre handsomely plowed in 45 minutes with one of these plows, with one pair of heavy horses and one driver, and the horses were not overworked).

Effects of Impure Water.—"W. W. S.," Rockford, Ill. The too rapid souring of milk is frequently the effect of impure water which has been drank by the cows. When the stock water is derived from ponds and sloughs, it is always contaminated with numberless microscopic vegetable forms and myriads of germs or spores of this minute vegetation. These accompany the decomposition of organic matter contained in the water. When this impure water is drank by a cow, these germs or spores are absorbed along with the water into the blood, being so exceedingly small that they pass through the absorbing glands and vessels of the intestines with ease. In the blood these spores or seeds grow, and if very numerous may become the cause of those blood diseases commonly known as "murrain," "black leg," "red water," &c. In any case as they pass into the circulation they must necessarily affect the milk which is derived from the blood. When the milk is exposed to the air, these minute organisms grow very rapidly and change the character of the milk, causing the formation of acid and then rapid decomposition. The spores and plants cannot be destroyed at a less heat than that of boiling water, and it is doubtful if that heat will destroy all of them. A heat of 120 degrees assists their growth instead of arresting it, and this may account for the fact that heated milk sours more rapidly than the cooled milk. The only remedy is to use well water for the cows, or water from deep underground cisterns.

Effects of Forests on the Rain-fall.—"A. S.," Olathe, Kansas. The character of the present season will probably have the effect of modifying the views of those persons who have been led into the error of supposing that the quantity of rain-fall depends upon the existence of forests. The past summer has been one of extraordinary moisture in parts of the country where there are no forests, as in Kansas, Nebraska, and Eastern Colorado, and of drouth in places where forests abound as in Northern Minnesota and Canada. The truth probably is that the development of meteorological effects, such as the fall of rain, the course of the winds, etc., depends upon causes which are not bounded by small areas, or even such a large area as that of our own continent. The destruction of a thousand or two square miles of woods is but a small thing in comparison to the other influences which affect the rain-fall of the whole world. Forests act as reservoirs of moisture, holding it until it is distributed gradually by means of springs, streams, and slow evaporation, and thus prevent floods which never occur disastrously in wooded localities. They also moderate the heats and colds of the season just as they moderate the distribution of water. They also act as a barrier against the excessive force of the winds. They are therefore indispensable to our comfort, and where they do not exist naturally, should be planted as rapidly as possible. The whole surface of the earth cannot be given up to cultivation, any more than a man's whole life can be given up to work; some portion must be left fallow and to rest; and to grow timber is an actual rest to the land.

When to Plow Under Clover.—"R. J. H." If oats are to be sowed on a clover sod, we would plow the sod in the spring and sow the ground immediately while the soil is mellow and fresh. Oats do very well on a newly turned sod.

Ice House.—"R. P.," Woodbury, Md. Plans of ice houses were given in the *Agriculturist* of October, 1870, November, 1871, and October, 1874. These are of different style of construction, but the principle is the same in all of them.

The Use of Lime.—"E. N. S.," McMillan's Station, E. Tennessee. It is impossible to say whether this or that soil can be improved by lime without experimenting. The proper way is to scatter a certain quantity of lime, say ten bushels upon a quarter of an acre of land and wait to see the effect. If it is found to pay try again in a larger way, on a whole field. Generally clay soils and those full of peaty or vegetable matter are improved by lime; but it is not a cure-all or panacea for all sorts of poor land. As in human diseases, so in sick or defective soils, there is no cure-all; the claim that certain fertilizers are good for all soils, is as much quackery as the same claim for a medicine. Experiment with observation is needed. The investigations of science are coming to help us to less hazardous and less costly experiments, ere long.

"Walks and Talks" Correspondence.

WHICH IS THE BEST GRAIN DRILL?—"W. H. H.," Milton, Pa., writes: "I have no grain drill, and want to get one of the best. Of the many kinds, which shall I select? The agent for the 'Champion' will convince one that their's is the best."—If he "convinces" you of this fact, buy it by all means. It is a good drill.—"The agents for the 'Farmer's Favorite' tell you to buy no other than a double force-feed drill, while those of the 'New Gearless Buckeye,' would have you believe that in all essential points their's excels all others. Now how can a farmer determine which is the best?"—You must hear all that is said, examine carefully for yourself, and act according to your best judgment. I have seen the "Champion" at work, have tried a "Buckeye" drill belonging to a neighbor, and own and use a "Farmer's Favorite." These are all good drills, but I cannot undertake to decide which is the best. One thing I can say, you had better get a drill that has a good manure attachment, and if you have many stones in your fields, you had better get rubber springs to the coulters.

MANURING CORN.—"W. J. S.," Calhoun Co., Iowa asks how I manure corn in the hill, whether the manure is put under or over the corn, or on top of the ground. I have not manured corn in the hill for several years, and should not think it would pay an Iowa farmer to do so. [The fine roots of corn spread out through the whole surface soil, and find manure anywhere in it. A *little* in the hill, on poor soils, sometimes gives the young plants a good start.—ED.]

SOWING WHEAT ON GOOD LAND.—"J. W. W.," of Wisconsin, writes that he "lives in the Chinch-bug region, but believes that good farming will arm us against them."—He sends me a sample of the Diehl wheat. It is whiter than my own. He has twice taken the first prize at the Wisconsin State Fair with it. He also raises the Fultz wheat. It is good this year.—"The one lesson I have learned thus far," he writes, "is not to sow winter wheat on ground which I do not believe is fitted for it. This may seem trite to you, but it is something for a western farmer to learn."—It is something which farmers everywhere would do well to think about. I try to live up to this rule myself.

THE TRIALS OF FARMING.—We know that trials lead to patience, and patience experience, and experience hope, and if it was not for hope, what should we amount to? Now trials are the common lot of farmers. And it does not matter where we farm, east or west, north or south. A farmer and minister in Nebraska has favored me with several letters, giving his experience, and telling me of his hopes and disappointments. Last year the grasshoppers did him a great deal of damage.—"This year," he writes, "I rented my farm, but by the wet weather some 25 acres got into sunflowers, so that the renters did not harvest the wheat, and now they refuse to cut off the sunflowers. The balance of the crop is very poor, on account of the wet weather and weeds. Some 20 or 25 acres of barley was taken away by the flood. Now I will farm myself another year."—That is right. What is needed is a better system of farming.

MANGEL WURZEL OR BEETS VS. CARROTS AND PARSNIPS.—Steele Brothers, La Porte, Ind., ask the following questions: 1st. "In what respect do you consider mangel wurzel better than Lane's improved sugar beet?"—I do not suppose there is now any difference.—2nd. "Do you consider beets better, pound for pound, than parsnips and carrots for milch cows?"—No. Precisely the opposite.—3rd. "Or do you prefer the mangels because so much more food can be raised per acre?"—Yes; and because they require less labor in weeding and hoeing.

GRASS FOR WOOD LOT.—"R. S. E.," Akron, Ohio, says that I once gave him advice that was of use to him, and now he writes that he has a piece of wood-land, high and dry, and not heavily timbered, still so heavy that grass does not grow upon it. He is short of pasture, and wants to get it into grass; he asks: "Would it pay me to clean out all of the underbrush, logs, and rubbish, drag it thoroughly, and sow it to grass seed, and if so, what kind or kinds would be best?"—I do not know, I have just such a lot, and my own plan is to sow timothy, Kentucky blue-grass, and red-top, without harrowing or other preparation.

PLEASE WRITE AGAIN.—William Denny, of Greenville, writes me a letter enclosing a stamp for reply, but he forgets to tell in what state he lives, and the postmark on the letter, as usual in such cases, is illegible. There are 26 Greenvilles in the United States. [An astonishing number of letters go unanswered for this very reason; we get stamps to pay for a reply "by return mail," and have no idea where the writer lives.—ED.]

WHEN TO APPLY LIME.—"C. H. S.," of Richfield, writes that he has "a fifteen acre field lying on top of a limestone ridge. It laid under blue-grass 8 or 10 years until 1873. I then fallowed it in the spring and cultivated four times through the summer, and sowed wheat, and seeded with clover in the spring of 1874. The wheat winter-killed, and the hot, dry weather in July burnt up the clover, except on a few small spots of lighter soil. Now there is nothing on the field but blue-grass and wild turnips. My object is to get it into clover, and I thought of sowing it with oats next spring and seeding down. There is a heap of 1,600 bushels of lime in the field which is to be spread upon it. Would you haul the lime on the field now, and plow it in the spring, or would you plow now, and put the lime on in the spring and cultivate it?"—The better plan, perhaps, would have been to have summer-fallowed the field, plowing it three times, and then after sprinkling the lime and harrowing or cultivating it in, sowed to wheat and seeded with clover in the spring. The next best plan would be to break it up as early as possible in the fall, cultivate and harrow the surface and then plow it again in October or November, and leave it rough for the winter. Sow the lime on in the spring and seed down with barley or oats. Mr. C. H. S. asked me to answer his letter by mail, but he did not tell me what *State* he lives in.

LAMB OR MUTTON.—"R.," Salem Co., N. J., writes: "Will it pay to feed lambs, common stock, until fall and then sell them, as I believe is your plan, when we can get from ten to twelve dollars a pair for them as soon as they are fit to commence shipping, about Easter?"—No. It will pay far better to sell them early to the butcher. I have never recommended keeping lambs until fall and then selling them. I would keep them until the next spring and sell them after shearing. I can make grade Cotswold sheep weigh 150 lbs. at 12 to 15 months old, and I have thought that in some sections this might pay better than selling lambs.

SOUTH-DOWN OR COTSWOLD.—The same correspondent asks: "Is it best to keep a Cotswold or South-Down to cross with common ewes?"—I believe in New York the butchers will pay more for grade South-Down lambs than for long-wooled, white-faced lambs. And on this account when lambs are raised solely to sell early to the butchers, some of the black-faced breeds, such as the South-Down, Hampshire-Down, or Shropshire-Down, will be more profitable than the Cotswold or Leicester. In saying this I am not admitting that the lambs are really any better, but that people think so, and it is well for us producers to humor our customers. But if you are going to raise lambs for mutton and wool, selling perhaps the ram lambs to the butcher early, I should much prefer to use a pure Cotswold ram.

SALT FOR PIGS.—"R.," Mix say 10 parts sifted ashes, 2 parts salt, and 1 part sulphur, and let the pigs eat all they will of it. I would not compel them to eat salt by mixing it with their food.

ESSEX HOGS, ORCHARD GRASS, BONE-DUST, ETC.—I have received the following from West Virginia: "Are the Essex hogs as quiet as the Chester?"—*Ans.* Much more so.—"What is the average weight of Essex hogs at one year old with very ordinary feed?"—*Ans.* I cannot tell what is meant by *very* ordinary feed. If you mean skim milk and slops from the house, with a little mill feed and corn-meal in winter, or a run with cattle eating corn, the good clover pasture in summer, and the run of the stables in the fall, and then finished off with corn for a few weeks, good grade Essex should weigh 300 lbs. at 12 months old. But if "very ordinary" feed means something little more than a starvation diet, they would probably weigh from 75 to 100 lbs....."I wish to sow a piece of thin and rather wet land with rye and get it set in grass until I can drain and manure it. Which is the best, Kentucky blue-grass or orchard grass?"—*Ans.* I think it would be better to seed some timothy-seed with the rye..."My land will produce about 5 bushels of wheat per acre without manure; will it pay to buy bone-dust and sow on the wheat?"—*Ans.* If you could get good bone-dust for $15 or $20 per ton, it would pay you in the end, but probably not the first year. Peruvian guano would produce a better effect on the wheat, and would help the clover afterwards. Your main dependence must be on good cultivation and on feeding more stock...."I want to make 150 two-horse loads of manure the coming winter. I think of hauling enough leaves to make half the amount, and put them in the yard where they will soak up all the waste from the stables, and during the winter pass enough through the stables as bedding, to make up the other half. Can I make that much with 2 horses and 4 hogs?"—*Ans* If you draw leaves enough you can. But you should try to keep more hogs and sheep, even if you have to buy feed for them. I like your pluck and spirit, and you are on the right track. But when I think of you gathering leaves to soak up the liquid in the yard from 4 hogs and 2 horses, I can but wish you had a large herd of good hogs to care for.

SWELLINGS ON HOGS.—"W. C. W., Ind., has a sow that has "hard lumps all over her."—Are they not caused by the other sows fighting her? Open them with a lance or sharp knife and you will probably find them full of blood and water. Continue to let her have a little better food than the other pigs she is running with. This, as she is a breeding sow, will be better than shutting her up by herself.

BONE-DUST.—Mr. Lewis Schilling, of Ohio, sends me a sample of his "odorless bone-dust," and wants me to show it to the Deacon and the Squire, and then send him an order for ten tons of it so that we can raise some "Centennial wheat."—This is asking too much. I do not want the Deacon to beat me again on wheat the coming year, and I do not want to pay $600 for ten tons for my own use. The same amount of money spent in buying malt combs or bran will give me as much nitrogen, phosphoric acid, and potash, and get a good deal of pork, mutton, wool, milk, and butter into the bargain.

ESSEX HOGS.—"T. H.," Keokuk Co., Iowa, writes: 1st. "What color are the Essex?"—*Ans.* Black.—2nd. "Are they docile?"—*Ans.* Yes, more so than any other breed I am acquainted with.—3rd. "Do they fatten easily when young?"—*Ans.* Yes.—4th. "Are they hardy?"—*Ans.* When they have got their growth they will stand starvation and neglect as well as the commonest scrub, but when young, like all other high-bred animals, they require good care and good feed, just such care and feed as any good farmer gives common pigs.—5th. "Will they cross well on grade Poland China sows?"—*Ans.* This is precisely what I recommend them for. A grade Poland China, Chester White, or Berkshire sow put to a pure-bred, fine boned, well formed Essex, will give you the perfection of a hog for bacon, pork, hams, and lard.

Catalogues Received.

The following catalogues have come to hand since the last list was published in the July *Agriculturist.*

SEEDS.

LAW, SOMNER & Co., Melbourne, Australia. A very complete catalogue of vegetable and flower seeds, together with a special chapter on the grasses and forage plants which do well in the climate of Australia.

PLANTS.

GEORGE SUCH, South Amboy, N. J. Catalogue of Stove and Greenhouse plants, including many rare Palms and Orchids.

E. T. TEAS & Co., Richmond, Ind. Catalogue of Greenhouse and Bedding Plants, with a special list of Roses, including many of the newer sorts.

WILLIAM ROBINSON & SONS, Tooting, London, S. W. England. A very large list of Plants both tropical and hardy, and including many of our native species.

J. C. SCHMIDT, Erfurt, Germany. A Catalogue of Dried Flowers, Grasses, and other articles used by bouquet-makers.

NURSERIES.

Fall is the season during which many persons prefer to plant out fruit-trees, so that most nurserymen prepare a special circular for the fall trade. The following are of the above sort:

ATWOOD, ROOT & Co., Geneva, N. Y. CALKINS & BROOKS, Bricksburg, N. J. ROBERT DOUGLAS & SONS, Waukegan, Ill. A. HANCE & SON, Red Bank, N. J.; list of Peach and other Fruit-buds. WILLIAM HOLLAND, Plymouth, Indiana. SAMUEL KINSEY, Dayton, Ohio. THOS. H. LESLIE, Ipava, Ill. WILLIAM H. JOHNSON, Ivesdale, Ill. E. MOODY & SONS, Lockport, N. Y. TEBO NURSERY CO., Clinton, Mo. S. B. PARSONS & SONS, Flushing, N. Y. JAMES O. SHELDON, Geneva, N. Y. JOHN WAMPLER, Carthage, Mo.; Amsden Peach.

AUTUMN BULBS.

BEACH, SON & Co., No. 7 Barclay street, N. Y. Wholesale Catalogue.

LONG BROTHERS, Buffalo, N. Y. Catalogue of Floricultural Stock.

J. M. THORBURN & Co., 15 John street, N. Y. Descriptive Catalogue of Bulbs.

JAMES VICK, Rochester, N. Y. The last number for the year of Vick's Quarterly, contains, besides the descriptive list of hardy bulbs, other interesting matter useful to the amateur, as well as professional florist.

MISCELLANEOUS CATALOGUES.

CHAS. G. BLATCHLY, Philadelphia, Pa. Circular descriptive of Horizontal Ice Cream Freezer.

CAPRON WRINGER CO., Hudson, N. Y. Price-list of Clothes Wringers.

IRA & IRO COE, Quincy, Ill. Patent Fruit-Gatherer.

HILL'S ARCHIMEDEAN LAWN MOWER CO., Hartford, Conn. Descriptive Circular.

E. E. LUMMUS, Boston, Mass. Manufacturers of Holbrook's Seed Drills.

STANDARD LAUNDRY MACHINERY CO., Boston, N. Y. Complete Catalogue of all improved Laundry Machinery.

FARM IMPLEMENTS.

The FURST & BRADLEY MANUF'G CO. of Chicago, Ill. BRADLEY MANUF'G CO. of Syracuse, N. Y. DEERE & CO. of Moline, Ill., whose specialties are Gang-Plows, Cultivators, Breaking Plows, and other implements.

WYCKOFF & McDONALD, of Hightstown, N. J., makers of a Potato Digger, and Riggs' Patent Furrower.

W. H. BANKS & Co., of Chicago, Ill., manufacturers of Corn Shellers, Horse Powers, and of the Dodge Excelsior Hay Press.

The EAGLE MOWING & REAPING CO. of Albany, N. Y., make the W. A. Wood's Improved Mower and Reaper.

SCHENCK & SHERIDAN, Fulton, N. Y., manufacturers of the Torsion Wagon Springs.

PHILLIP S. JUSTICE, 42 Cliff st., N. Y., makers of the Galvanized Elastic Wire Cable and Iron Posts for fences.

Portable Mills of all kinds made by EDWARD HARRISON, New Haven, Conn.

Sorgho Hand-Book and Catalogue of Sorgho machinery issued by the BLYMYER MANUF'G CO. of Cincinnati, O.

WINDMILLS.

The U. S. WIND ENGINE CO., Batavia, Ill., makers of Halliday's Windmills and Pumps. ECLIPSE WINDMILL CO. of Beloit, Wis. C. T. EDWARDS, Moline, Ill., makers of the Moline Windmill.

State, County, and other Fairs for 1875.

State, Provincial, etc.

Sept. 8—Oct. 9.—Cincinnati Industrial at Cincinnati, O.; Indiana at Indianapolis (9-2); Iowa at Keokuk (27-1); Louisville Industrial at Louisville, Ky. (Sept. 1-Oct. 16); Montana at Helena (27-2); New York at Elmira (27-1).

Oct. 26-Nov. 1.—Alabama at Selma; Connecticut at Hartford (5-8); Georgia at Macon (18-23); National Exposition at Rome, Ga., (4-9); North Carolina at Raleigh (12-16); Ohio at Columbus (6-10); Oregon at Salem (11-16); Rhode Island at Providence (5-7); St. Louis Association at St. Louis, Mo., (4-9); Virginia at Richmond (26-30).

County and Town Fairs.

MAINE.

Oct. 5-7.—Androscoggin at Lewiston; Cumberland at West Cumberland; Kennebec at Readfield Corner; Franklin at Farmington (5-6); Hancock West at Bucksport (6-8); Oxford at South Paris (5-8); Lincoln at Waldoboro (12-14); Oxford West at Fryeburg; Sagadahoc at Topsham; Waldo at Belfast (11-13).

MASSACHUSETTS.

Sept. 29—Oct. 1.—Housatonic at Great Barrington; Worcester, Southeast at Milford; Franklin at Greenfield (30-1); Norfolk at Readville; Worcester, West at Barre.

Oct. 5-6.—Hampden at Springfield; Martha's Vineyard at West Tisbury; Worcester Northwest, at Athol; Berkshire at Pittsfield (5-7); Hampshire, Franklin, and Hampden at Northampton (6-8); Marshfield at Marshfield.

CONNECTICUT.

Sept. 28-Oct. 1.—Middlesex at Middletown.

Oct. 5-7.—Danbury at Danbury; Guilford at Guilford (13).

VERMONT.

Sept. 30 Oct. 1.—Washington at Montpelier.

Oct. 5-8.—Orange at Bradford.

NEW YORK.

Sept. 27-Oct. 2.—Central New York at Utica; Madison at Oneida (28-1); Newburgh Bay Hort'l at Newburgh (29-1); Wayne at Palmyra (30-2).

Oct. 5-7.—Madison at East Hamilton; Schoharie at Schoharie; Seneca at Waterloo; Suffolk at Riverhead; Yates at Penn Yan; Eastern New York at Albany (5-8); Sangerfield and Marshall at Waterville (5-6); Schuyler at Watkins (6-8); Steuben at Bath.

NEW JERSEY.

Oct. 5-6.—Burlington at Mount Holly; Somerset at Somerville (5-6); Warren at Belvidere (5).

PENNSYLVANIA.

Sept. 28-Oct. 1.—Northumberland at Sunbury; Lehigh at Allentown (29-2); Westmoreland at Greensburgh; Fayette at Brownsville (30-1); Greene at Waynesburgh; Washington at Washington.

Oct. 4-7.—Crawford at Titusville; Bucks at Doylestown (5-8); Northwestern Penn. at Erie; Columbia at Bloomsburg (13-15).

OHIO.

Sept. 28-Oct. 1.—Crawford at Bucyrus; Hardin at Kenton; Harrison at Cadiz; Huron at Norwalk; Logan at Bellefontaine; Lucas at Toledo; Muskingum at Zanesville; Preble at Eaton; Southern Ohio at Dayton; Stark at Canton; Tuscarawas at Canal Dover; Wood at Tontogany.

Sept. 29-Oct. 1.—Delaware at Delaware; Lake at Painesville; Medina at Medina; Hancock at Findlay (29-2).

Oct. 4-7.—Butler at Hamilton; Knox at Mt. Vernon (5-7); Mahoning at Canfield; Ottawa at Port Clinton; Champaign at Urbana (5-8); Licking at Newark; Marion at Marion; Union at Marysville; Gallia at Gallipolis (6-8); Greene at Xenia; Hocking at Logan (7-9); Carroll at Carrollton (13-15); Central at Orrville; Fairfield at Lancaster (13-16); Wyandotte at Upper Sandusky (11-14).

INDIANA.

Sept. 27-Oct. 1.—Greene at Linton; Loogootee at Loogootee; Jay at Portland (28-1); La Grange at La Grange; Prairie Farmer at Francesville; Lake at Crown Point (29-1); Spencer at Rockport (28-2).

Oct. 4-9.—Boone at Lebanon; Richmond Industrial at Richmond; Northeastern Indiana at Waterloo (5-8); Noble at Ligonier; Wells at Bluffton; Knox at Vincennes (11-16); Worthington at Worthington (4-10); Warrick at Booneville (12-16).

ILLINOIS.

Sept. 27-Oct. 1.—Christian at Taylorsville; Marion at Centralia; Wabash at Mt. Carmel.

Sept. 28-Oct. 1.—Adams at Payson; Clay at Flora; Crawford at Robinson; De Kalb at Sycamore; Fulton at Avon; Gallatin at Shawneetown; Greene at Carrollton; Henderson at Biggsville; Jo Daviess at Galena; Kankakee at Kankakee; Livingston at Pontiac; Macoupin at Carlinville; Marshall at Wenona; Mason at Havana; Mercer at Aledo; Montgomery at Litchfield; Pike at Pittsfield; Fayette at Vandalia (29-1); Randolph at Sparta; Ford at Gibson City (30-3); Jasper at Newton (29-2); Kane at Geneva; Lake at Waukegan (27-2).

Oct. 5-8.—Edwards at Albion; Effingham at Effingham; Iroquois at Onarga; Jo Daviess at Warren; Knox at Galesburg; Lawrence at Lawrenceville; Peoria at Peoria; Pope at Golconda (6-9); Clay at Louisville (12-15); Jersey at Jerseyville; Williamson at Marion; Hardin at Elizabethtown (13-16); Madison at Edwardsville (28-31).

DELAWARE.

Oct. 6-8.—New Castle at Middletown.

WEST VIRGINIA.

Sept. 28-Oct. 1.—Macon at Point Pleasant.

MICHIGAN.

Sept. 29 Oct. 1.—Lenawee at Adrian.

IOWA.

Sept. 28-Oct. 2.—Page at Clarinda; Wayne at Corydon (Oct. 4-6).

KANSAS.

Sept. 28-Oct. 1.—Neosho Valley at Neosho Falls; Allen at Iola (Oct. 6-9).

CALIFORNIA.

Oct. 4-10.—Santa Clara at San Jose; Santa Cruz at Santa Cruz (7-9).

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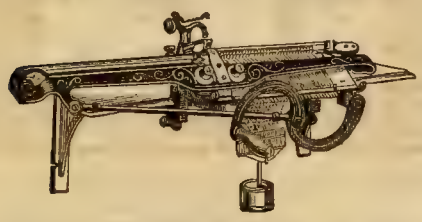

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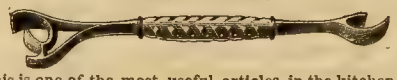

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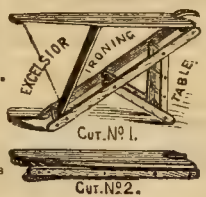

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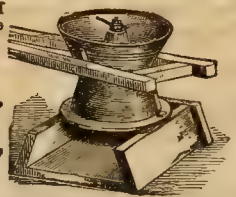

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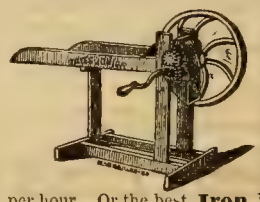

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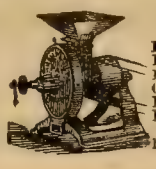

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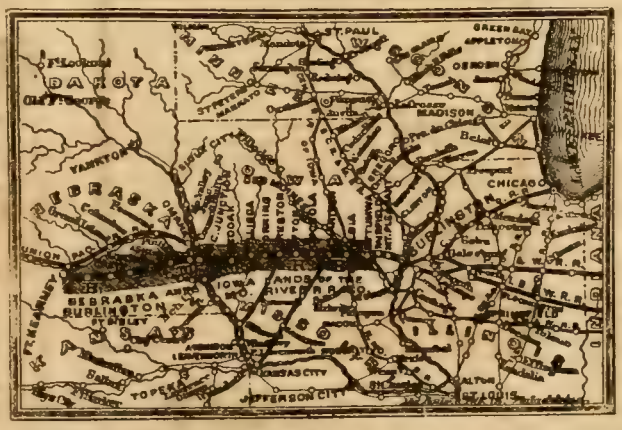

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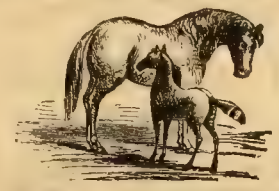

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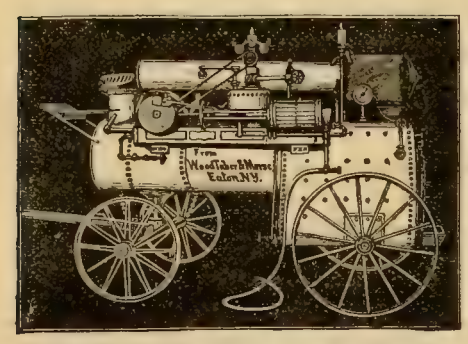

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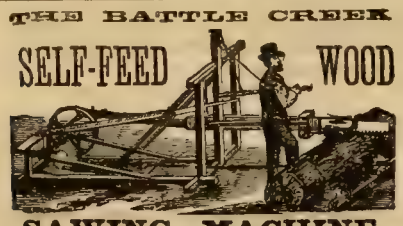

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		Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.	Sun rises.	Sun sets.	Moon sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	M	6 33	4 53	6 19	6 30	4 57	6 56	6 37	5 0	7 3
2	T	6 34	4 52	7 28	6 31	4 56	7 35	6 38	4 59	7 43
3	W	6 35	4 51	8 21	6 32	4 55	8 31	6 39	4 58	8 38
4	T	6 36	4 50	9 28	6 33	4 54	9 34	6 40	4 57	9 41
5	F	6 38	4 49	10 35	6 34	4 53	10 40	6 31	4 56	10 45
6	S	6 39	4 47	11 44	6 35	4 51	11 47	6 32	4 55	11 51
7	S	6 40	4 46	morn	6 36	4 50	morn	6 33	4 54	morn
8	M	6 42	4 45	0 53	6 38	4 49	0 53	6 35	4 53	0 58
9	T	6 43	4 44	2 2	6 39	4 48	2 3	6 36	4 52	2 4
10	W	6 44	4 43	3 13	6 40	4 47	3 13	6 37	4 51	3 12
11	T	6 46	4 42	4 27	6 42	4 46	4 25	6 39	4 50	4 23
12	F	6 47	4 41	5 43	6 43	4 45	5 42	6 40	4 49	5 38
13	S	6 48	4 40	rises	6 44	4 44	rises	6 41	4 48	rises
14	S	6 50	4 39	5 30	6 46	4 43	5 37	6 42	4 47	5 44
15	M	6 51	4 38	6 29	6 47	4 42	6 36	6 43	4 46	6 44
16	T	6 52	4 37	7 29	6 48	4 41	7 46	6 44	4 45	7 53
17	W	6 53	4 36	8 56	6 59	4 40	9 2	6 45	4 44	9 8
18	T	6 54	4 35	10 12	6 50	4 40	10 19	6 46	4 44	10 21
19	F	6 55	4 34	11 21	6 51	4 39	11 25	6 47	4 43	11 28
20	S	6 57	4 34	morn	6 52	4 38	morn	6 48	4 42	morn
21	S	6 58	4 33	0 30	6 53	4 38	0 32	6 49	4 42	0 33
22	M	6 59	4 32	1 35	6 54	4 37	1 35	6 50	4 41	1 36
23	T	7 0	4 31	2 36	6 55	4 36	2 36	6 51	4 41	2 35
24	W	7 2	4 31	3 40	6 57	4 36	3 38	6 52	4 41	3 36
25	T	7 3	4 30	4 44	6 58	4 35	4 41	6 53	4 40	4 37
26	F	7 4	4 30	5 49	6 59	4 35	5 44	6 54	4 40	5 40
27	S	7 5	4 29	sets	7 0	4 35	sets	6 55	4 40	sets.
28	S	7 6	4 29	5 37	7 1	4 35	4 44	6 56	4 40	4 51
29	M	7 8	4 29	5 33	7 3	4 35	5 30	6 58	4 40	5 38
30	T	7 9	4 28	6 16	7 4	4 34	6 23	6 59	4 39	6 30

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D	H. M.	H. M.	H. M.	H. M.	H. M.
1st Quart	6	5 8 mo.	4 56 mo.	4 44 mo	4 32 mo.	4 2 mo.
Full M'n	13	4 46 mo.	4 33 mo.	4 22 mo	4 10 mo.	3 40 mo.
3d Quart.	19	7 53 ev.	7 40 ev.	7 29 ev.	7 17 ev.	6 47 ev.
New M'n	27	6 59 ev.	6 46 ev.	6 35 ev.	6 23 ev.	5 53 ev.

AMERICAN AGRICULTURIST.

NEW YORK, NOVEMBER, 1875.

One of the most interesting questions to the farmer just now is, how he may make the most out of his stock. The common native stock of the country is not sufficiently profitable. It produces too little beef, butter, wool, mutton, pork and lard, and it takes too long to produce what it does, to be profitable in this rapidly moving age. Farmers must float with the stream of improvement, or they will find themselves cast high and dry upon the banks. Feed is the farmer's raw material, and his stock the machinery, from which he manufactures his wares. No matter how skillfully he feeds, if his machines are imperfect or slow in action, his wares must necessarily cost too much. To improve his machinery, that is the stock which he feeds, is as needful as to study how to feed. All the investigations and experiments he, and others for him, can make go for nothing, if the animals he feeds cannot digest and assimilate the food in sufficient quantity to turn it into salable material fast enough. In order that this may done more rapidly, breeders have, for years, been improving their stock. Cattle, sheep, and pigs of improved breeds come to maturity and reach double their weight at half the age of the unimproved breeds. Unfortunately we are bewildered when we hear and read of the marvelous prices at which some of these animals are sold. Clearly they are out of the farmer's reach. But it would be wrong to suppose that he is therefore debarred from improving his stock by the use of improved animals. The past month over 1000 head of Short-horn cattle have been sold at various public sales. Many of these have been of the fancy sort, valued at very high prices for their pedigrees. No complaint can be made if a wealthy man chooses to give $10,000 for one of these animals, any more than if he gives the same amount for a diamond. He injures no one, and does at least some good with his surplus money. But fortunately he has no monopoly of the really good cattle. A good judge of stock would be equally well, or better, satisfied with an animal that at the same sale brings but $200 or $500, simply because its family is not so fashionable, or it has not "*so sweet a head.*" Hundreds of valuable bulls are sold every year, at prices that any prosperous farmer can afford to give, and which will bring him a handsome profit. The prize milk cow at the New York State Fair this year, was a grade Short-horn, sired by a bull that is not valued at more than $150, if so much. The fattest steer was of the same kind. There were two-year-old sheep weighing 280 lbs., and yearling pigs that weighed over 300 lbs., and the sires of these animals could have been purchased for $50 each. To use such animals as these would in a short time double the value of our farm stock. Let no one then be deterred from investigating this matter of improved stock, because some rich men choose to make a fancy of a certain class of it, and give what some may think ridiculous prices for it. We gave $5, (a ridiculous price it was thought), for our first pound of Early Rose potatoes, and the second year we gave away more than $5 worth to friends, and sold $125 worth at $1 a bushel from the produce of that pound. Improved stock ought to be a better thing to have than an improved potato, and it is, provided it is used with judgment and well cared for.

Hints about Work.

Wheat and Rye.—Many farmers who did not have manure at sowing time, or who had not time to draw it out, are now spreading it upon the fields. If it is well rotted and fine, it is well to do this. But we never found any benefit from top-dressing wheat or rye with coarse fresh manure at this season. As a mulch it is of little good scattered here and there in patches. We would rather save all the coarse manure, and pile it and turn it over, so as to get it in fine condition by the spring, and then use it as a top-dressing. Plants require *food*, and manure is not food until it is reduced by rotting, and brought into a condition digestible by the plant.

Fodder Crops.—Either wheat or rye may yet be sown for early spring pasturage or soiling. Rye gives less foliage than wheat, but it is hardier, and although the seed may not sprout now, it will grow very early in the spring, and make a good growth in time for use. In the south winter tares and oats may be sown for early feed either alone or mixed. If mixed, nearly as much seed may be sown as if alone; the two crops will grow together, and yield about as much as if separate. Two bushels of each mixed may be sown on an acre.

Root Crops.—Turnips will yet make considerable growth. On rich soil where the crop is heavy, nothing is gained by leaving it any longer. The roots will become coarse and woody. Moderate sized roots are more nutritious than large overgrown ones. A crop of 25 tons is now worth as much to feed, as it would be if left a month longer to make 30 tons.

Meadows.—Top-dressing is worth more to grass lands than any other crop. But we would not top-dress any but permanent meadows. For sod to be plowed up in the spring, it would be better to rot the manure and apply it as near the seed as possible. As there is a difference of opinion on this matter, and as the quality of manure and that of the soil varies, it would be well for each to test the question by experiment for himself.

Storing Roots.—Root crops and potatoes should be secured from frost as they are gathered, and tops will be a sufficient covering until heavy frosts are expected, when the pits should be well secured, or the roots removed to the cellar. See page 426.

Fall Fallowing may still be done; heavy soils are improved by being fall plowed and left rough through the winter. Moderately light land intended for oats, or spring wheat, should also be plowed now and left in ridges which can be harrowed down early in spring. Ground for early potatoes should also be plowed now. Sod for corn, and sandy soils, should be left unplowed until spring.

Stock should now go into winter quarters. Nothing is gained, and much is lost by allowing them to roam the wet sodden fields, and obliging them to eat frozen coarse stuff that has no more nutriment than wood-chips. Exercise during a portion of the day in a yard or small lot will be beneficial. To feed all farm stock so as to keep them thrifty is the right method; overfeeding is as injurious as underfeeding, and irregular feeding as bad as or worse than either. Feed regularly and generously, and

provide pure water liberally and frequently. To prevent sickness is much easier and vastly better than to cure various troubles by medicine.

Horses and Colts.—If the stable is comfortable, no horse should be blanketed at night. Much mischief is done by keeping animals too warm. The coat is greatly thickened as cold weather approaches, and provision is made by nature for the change of season. Good ventilation is absolutely necessary, and a temperature of 40° in the stable is more healthful in winter than 60°. A pound of oil-cake meal at each feed, will help to keep a horse warm and his coat smooth. If his coat is smooth he is in good health. Colts should have plenty of exercise, and a moderate but regular supply of grain. Coarse food given to colts tends to enlarge the digestive organs, and produce a "pot-belly," which destroys their future capability for quick work.

Cows and Calves.—Cows which are to come in early should be dried off six or eight weeks previously. Both cow and calf will be the better for it. Profuse milkers that can not easily be dried will be better to be milked regularly and fed cautiously. There are but few cows that are of this character, but these few will need special and careful treatment. Calves and yearlings will need such treatment as will keep them thrifty without forcing them. Bran and oat-meal are the best grain food for young cattle.

Sheep.—Rams will now need to be well fed. A quart of mixed oats and wheat bran, with the best clover hay, will be the best food for a ram in service. Ewes that have been served should be fed half-a-pint of the same extra food, with a little oil-cake meal, and should be kept quiet, and not driven, or worried by dogs. When it can be done conveniently, the ram should be turned in with the ewes only at night, being kept in a yard alone in the day.

Swine.—Fattening hogs should be pushed forward as rapidly as possible. Fat is now made at less expense of food than in cold weather, and in the present condition of the market, it is at least safe to market hogs as early as possible. Store hogs should be fed a portion of roots if possible. Smutty corn is highly injurious, or even poisonous to hogs and other stock, and its use should be avoided. Spring pigs may now be provided for. There are no better pigs than grades of the pure breeds. Whatever breed is chosen, the boar should be fine in the bone, smooth, well haired, and at least a year old. Sows coupled in this month will farrow in March, going with young sixteen weeks.

Sundry Matters.—This is the season for renewing the subscription for papers, and procuring what books may be needed for reading and study during the leisure days of winter. Every farmer's family should have a good paper and a few books. These make home attractive, and keep the family circle unbroken in the evenings. Then every one is pleased; the wife is happy to have her family around her, the father finds the society of his children as pleasant as that of other people, and the children are gratified to know that their society is sought by their parents. Nothing tends to make the home more agreeable and united than for the children to know that their parents are interested in their society and their sports. While everything is pleasant within, everything without should be made snug and comfortable. It is needless to enumerate what should be done, but "whatsoever thine hand findeth to do, do it with thy might" as well as it can be done.

Work in the Horticultural Departments.

In all but the extreme northern states, November will be a month of active preparations for the coming cold weather. The late crops of cabbages, roots, etc., must be harvested, cellars, pits, and other storing rooms put in order, and everything made ready for sudden changes. Ground which is to be broken up at this season should be plowed and left in ridges so that the frost can do its part towards reducing the soil to a fine condition, ready for planting next spring. Fences will need repairing, and in many cases renewing, to keep stray animals out of the orchard and garden; gates must be put in order, and where the posts have been pulled out of position so as to cause sagging, they should be taken up and reset, and if convenient, the bottom may be surrounded with small stones, firmly rammed down. Manure is the basis of all good crops in the garden and orchard, as well as on the farm, and every means should be used to procure it by saving and composting all sods, leaves, muck, and other vegetable matter, as well as such animal substances as can be had. For a method to keep manure fermenting without freezing, see Walks and Talks, on page 419.

Orchard and Nursery.

All nursery stock which is received from the nursery for spring planting, should be heeled-in where the water will not settle during the winter; to avoid all danger from this source, it would be well to turn several furrows on each side towards the trees, thus leaving a trench to allow any water that may gather to run off. All ground which is to be used for nursery or orchard purposes, ought to be plowed at once, so as to have the benefit of the winter frosts; it would, however, be better if new land could be planted for one season with corn or potatoes, or some other hoed crops, before setting it out with trees.

Labor is so generally abundant and cheap now, that if one can employ more men to advantage, he had better do so. Drains may yet be dug in most places; wood-lots to clear up, brush and old trees to be grubbed out, and numerous other works of improvement that will warrant the employment of extra men at low wages. If tramps come around, give them nothing unless they will work for it.

Leaves.—Gather from the woods as many as possible, they will be useful for mulching, and also for bedding in the stable and pig-pens.

Fruit.—In order to properly keep winter fruit, the temperature of the room or cellar ought to be as low as can be kept without freezing; the doors and windows should be left open during the warm days and nights. When closed, proper ventilation must be provided.

Cider.—All fruit not fit for sale, either as the first or second quality, should be made into cider. This when made of sound apples, filtered through sand, barreled and bunged at once, will make a fine article. Never put rotten apples into cider, as they are sure to give an unpleasant flavor.

Vinegar, for which there is always a sale at remunerative prices, may be made from the inferior apples or surplus cider. A little old vinegar put into the casks with the cider will cause it to change to vinegar quicker than it otherwise would; always leave the bung out of barrels in which vinegar is making; the oftener it can be changed from one cask to another the sooner will it be fit for use.

Cions.—Cut and store in small bundles in sawdust or sand in the cellar; if in large parcels they are liable to heat and mold.

Seedlings.—Cover with leaves or hay, or what is better, if they can be had, evergreen boughs, but do not do this until freezing weather sets in.

Stocks for root-grafting should be lifted early this month and stored in earth in the cellar where they can be got at easily when wanted for working.

Fruit Garden.

The pruning of the various kinds of small fruits and vines, together with the work suggested under "orchard," will be in season in this department.

Grape-vines.—Prune this month if possible before freezing weather comes. Cut back the canes of vines which have been properly trained to two or three buds. Old neglected vines will each one require special treatment to bring it into proper shape for future training, and no general rule can be given. Save all well ripened wood which may be needed for propagation in the spring, tie in small bundles and preserve in sand in the cellar.

Strawberries will stand the cold winter better if a slight covering of leaves or hay is given, especially if the plants were newly set this fall. Do not cover so thick as to smother them; cover the soil well, but put very little on the plants; do not apply it before really cold weather has come.

Blackberries and Raspberries need but little attention now, if the old canes were cut off after the fruit had been picked. Some of the tender varieties of raspberries will do better if laid down and partially covered with earth.

Currants and Gooseberries.—Prune at once, cutting out the old wood where crowded, and shortening the new, and giving the bush an open head, to admit air and sun to prevent mildew. Save all cuttings needed for new plants, and plant at once, or preserve in sand in the cellar for spring planting. Apply manure to the plants which are to come into bearing the next season, there are no fruits which responds to manure more satisfactorily than these.

Trellises.—The present is a good time to paint all grape and other trellises; many use a lime-wash of some pleasing color, as it is cheaper than paint. Trellises so treated last longer, and are more pleasing to the eye than when left unpainted.

Insects.—In many places the oyster-shell bark-louse has become very common, and we often have inquiries as to what it is, and how its ravages can be stopped. It appears upon the bark of the branches, and sometimes spreads over the whole tree, and is very destructive. The best way where only a few young trees are affected, is to dig out and burn them, but when the whole orchard of large trees is affected, the cheapest way is to use a wash of whale oil soap, mixed with a little carbolic acid, and applied with a stiff brush.

Kitchen Garden.

Many of the directions given under this head last month, will be equally applicable now. Plow any grass land which is to be used for garden purposes, as spring plowed land seldom gives good returns.

Asparagus if not yet manured, should not be neglected until later, else there is danger of freezing. Cut off the tops and burn, to destroy the seeds.

Cold-Frames.—Prepare and have these in readiness at once, for fear of sudden freezing. Cabbages and other half-hardy plants may be kept over winter in safety in them, and also any seeds which do not like much moisture during the winter.

Cabbages.—The best plan for storing cabbages is to lay down two rails 4 to 6 inches apart, and then place the cabbages head downwards on them, leaving the roots exposed; then turn a furrow towards them on each side, and by the aid of the spade cover the head with 4 to 6 inches of earth; select a dry place where water does not stand.

Celery.—Store in trenches a foot wide, and as deep as the hight of the stalks; place the plants close together without any earth between them, and cover with straw and boards, increasing the thickness of the covering as the cold increases.

Spinach will winter better if the bed is covered with a few leaves, or a slight covering of hay just before the ground freezes solid.

Lettuce.—A small bed planted in some sheltered spot and slighly covered, will give an early crop next spring.

Roots may be preserved in root cellars where one is fortunate enough to have one, or in pits in the open ground; see several articles in this number of the *American Agriculturist*. Parsnips and salsify, if desired, may be left in the ground until spring.

Rubbish.—Clear up potato tops, melon vines, and the like, and burn the late weeds before any seeds have time to ripen; when left until spring, most persons are too busy to burn them, but rake them into the fence corners, where they serve as a nursery for every foul weed.

Flower Garden and Lawn.

Little more can be done now than to follow the directions given last month. Arrange all work so that there will be no delay in the spring, and everything will then go on smoothly.

Planting of ornamental trees and shrubs may still be done early this month, taking care not to

expose the roots for any length of time to the drying winds which usually prevail at this season.

Bulbs.—If these have been neglected until this month, plant at once, else there will be danger of the ground freezing before it can be done. All tender bulbs remaining in the ground ought to be dug and stored now, if not attended to before. Pot a supply of hyacinths for winter flowering, and put into the cellar until the roots are well grown; if the roots are not allowed to form, the bulb never makes a good flower.

Dahlias.—Remove the roots from the ground, and as soon as dry, store in the cellar.

Chrysanthemums.—Stake before the wind breaks them, and take up some to flower in-doors.

Protection must be provided for all half-hardy plants, but not applied until the weather becomes quite cold; if covered before, they are liable to start into growth and be injured by the winter.

Herbaceous Perennials may be divided up early this month, and planted out in new beds; they do best if divided as often as every three or four years; when not set until late they will be benefited by having a thin covering of marsh hay, or litter.

Greenhouse and Window Plants.

This department should be attractive at this season, making up in part for the lack of display during the summer. Everything in the way of repairs ought to have been done earlier in the season, and not a day must be lost now, in completing all changes which are to be made. If the houses require glazing, attend to this at once, and give the sash bars a coat of thick paint to fill up all cracks.

Bulbs required for flowers during the holidays, ought to have been potted last month; a safe rule to follow, is to bring them into heat 5 or 6 weeks before flowers are wanted.

Camellias.—Keep cool, and syringe occasionally, to retard the flowers as long as possible.

Roses trained to the rafters should be tied up as fast as they grow, and a little weak liquid manure water given occasionally.

Climbers, such as Passion-flowers, Tropæolums, etc., make very good plants for training on the rafter, as they furnish a good shade for other plants.

Heliotropes for winter flowers are very fine, and should be grown in boxes or large pots where they will have an abundance of root room.

Insects.—Fumigate weekly with tobacco stems, to destroy the green "fly." Destroy mealy bugs by hand picking, and scale by whale oil soap wash; for red spider give the houses frequent syringings, sprinkling a plenty of water on the pipes.

Commercial Matters—Market Prices.

Gold has been up to 117⅞, and down to 115⅝, closing Oct. 12th at 116¼, as against 117 on Sept. 11th..... There has been quite a free movement in the leading kinds of Domestic Produce. The export inquiry has been good for Breadstuffs, Cotton, and Provisions. The home trade demand has been fairly active. Some speculative call has been noted toward the close for Corn, chiefly on western account. The speculative dealings in Cotton, Pork, and Lard, have been quite liberal. Prices have been very variable. Flour, Wheat, and Barley, closed heavy; Corn, Oats, Rye, Pork, and Lard, left off more firmly. The recent arrivals of Barley have been large, and the market closed in favor of buyers. The offerings of Rye have been light, and have been ruling stronger. Only a few car loads of Buckwheat have yet been received and marketed, including State at 80 cents per bushel. Butter and Cheese and Eggs have been quoted higher, but close less buoyantly....Tobacco, Wool, and Naval Stores, have been in fair request, and quoted firmer....Petroleum closed at advancing prices, checking business, particularly for export....Seeds have been quiet and irregular....Hay and Hops declined, on a moderate business....Ocean freights have been more active, and quoted much stronger, but the later operations indicated a somewhat easier range of grain rates. Flour by sail and steam to London, 2*s.* 6*d.* @ 3*s.* per bbl.; Grain by sail, to do., 9½*d.* @ 10½*d.* per bushel; Grain by steam to Liverpool, 9½@9¾*d.*, and by sail, to do., 8½@9*d.* per bushel. Grain tonnage for Cork and orders, 6*s.* 9*d.*: for Penarth Roads, and orders, 6*s.* 3*d.*; for the Continent, 6*s.* 9*d.* per quarter.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Oct. 12th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	317,000	3,956,000	3,771,000	19,700	329,000	1,111,000
28 d's *last* m'th	314,000	4,913,500	3,918,000	29,000	41,000	1,061,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	422,000	5,013,000	4,086,000	17,000	215,000	1,786,000
28 d's *last* m'th	378,000	5,774,000	4,163,000	19,000	36,000	1,973,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1875	347,000	3,956,000	3,771,000	19,700	329,000	1,111,000
25 days 1874	331,000	3,214,000	1,711,000	103,000	117,000	802,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1875	422,000	5,013,000	4,086,000	17,000	215,000	1,786,000
25 days 1874	317,000	4,307,000	4,218,000	48,000	129,000	1,511,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Oct. 11, 1875	2,382,502	1,682,246	10,910	21,688	439,698	261,128
Sept. 6, 1875	1,251,321	1,173,086	11,216	1,963	214,069	293,081
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,655
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,647
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	794,722	135,882

4. *Exports from New York, Jan. 1 to Oct. 6.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1875	1,104,189	20,070,070	10,142,607	154,510	225	101,133	239,857
1874	1,687,023	29,691,058	16,676,486	563,181	3,320	94,438	285,699

5. *Receipts at head of tide-water at Albany each season to Sep. 30th.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875	69,900	12,807,100	5,850,700	88,000	339,500	1,262,300
1874	76,100	17,092,700	15,045,100	189,800	210,000	1,706,200
1873	95,000	14,981,200	12,570,700	828,800	133,400	2,378,100
1872	83,900	5,670,800	22,562,500	356,700	635,900	4,760,700

CURRENT WHOLESALE PRICES.

	Sept. 13.	Oct. 12.
PRICE OF GOLD	117	116 1-2
FLOUR—Super to Extra State	$5 15 @ 6 50	$4 90 @ 6 40
Super to Extra Southern	5 00 @ 8 50	4 90 @ 8 75
Extra Western	5 60 @ 8 25	5 40 @ 8 50
Extra Genesee	6 00 @ 7 25	5 90 @ 7 25
Superfine Western	5 15 @ 5 65	4 90 @ 5 40
RYE FLOUR	4 50 @ 5 75	4 25 @ 5 50
CORN-MEAL	3 50 @ 4 50	3 00 @ 4 15
BUCKWHEAT FLOUR, ℔ 100 ℔s	3 00 @ 3 25	2 90 @ 3 25
WHEAT—All kinds of White	1 35 @ 1 58	1 35 @ 1 55
All kinds of Red and Amber	1 05 @ 1 48	90 @ 1 40
CORN—Yellow	75 @ 78	73 @ 74
Mixed	65 @ 75	67 @ 73½
White	Nominal	76 @ 77
OATS—Western	40 @ 59	36 @ 55
State	40 @ 60	42 @ 55
RYE	90 @ 1 00	90 @ —
BARLEY	1 15 @ 1 30	1 00 @ 1 30
BUCKWHEAT, ℔ bush	— @ —	80 @
HAY—Bale, ℔ 100 ℔s	65 @ 1 10	60 @ 1 00
STRAW, ℔ 100 ℔s	50 @ 85	50 @ 90
COTTON—Middlings, ℔ ℔	14⅜@ 14⅝	13¾@ 14¼
HOPS—Crop of 1875, ℔ ℔	15 @ 22	10 @ 15
FEATHERS—Live Geese, ℔ ℔	35 @ 60	35 @ 60
SEED Clover, ℔ ℔	13 @ 13½	13 @ —
Timothy, ℔ bushel	3 00 @ 3 15	2 60 @ 3 00
FLAX, ℔ bushel	1 75 @ —	1 60 @ 1 75
SUGAR—Refi'g & Grocery ℔ ℔	7 @ 9½	6⅝@ 9¼
MOLASSES, Cuba, ℔ gal	32 @ 43	30 @ 40
New Orleans, ℔ gal	62 @ 68	63 @ 70
COFFEE—Rio (Gold)	17½@ 20	19 @ 21½
TOBACCO, Kentucky, &c., ℔ ℔	8 @ 25	8 @ 25
Seed Leaf, ℔ ℔	7 @ 45	7 @ 45
WOOL—Domestic Fleece, ℔ ℔	25 @ 55	25 @ 55
Domestic, pulled, ℔ ℔	25 @ 48	25 @ 48
California, clip	17 @ 32	15 @ 31
TALLOW, ℔ ℔	9⅝@ 9¾	10⅜@ 10½
OIL CAKE—℔ ton	41 00 @46 50	37 50 @45 00
PORK—Mess, ℔ barrel	21 25 @ —	22 50 @22 75
Prime Mess, ℔ barrel	19 00 @19 50	19 50 @19 75
BEEF—Plain mess	8 00 @ 9 50	8 00 @10 25
LARD, in tcs. & barrels, ℔ ℔	12½@ 13⅜	13 @ 13⅞
BUTTER—State, ℔ ℔	22 @ 35	24 @ 40
Western, ℔ ℔	15 @ 33	16 @ 37
CHEESE	2 @ 10½	4 @ 13½
BEANS—℔ bushel	1 65 @ 3 00	1 50 @ 2 75
PEAS—Canada, free, ℔ bu	1 20 @ 1 30	1 15 @ 1 20
EGGS—Fresh, ℔ dozen	18 @ 22	27½@ 30
POULTRY—Fowls	8 @ 17	12 @ 18
Turkeys—℔ ℔	16 @ 20	14 @ 19
Geese, ℔ pair	1 25 @ 2 50	1 25 @ 2 25
Ducks, ℔ pair	60 @ 95	55 @ 80
PIGEONS, ℔ doz	1 50 @ 2 37½	1 00 @ 1 75
WOODCOCK, per pair	80 @ 95	80 @ 1 00
SPRING CHICKENS, ℔ ℔	14 @ 18	14 @ 19
GROUSE, ℔ pair	— @ —	90 @ 1 00
PARTRIDGE, ℔ pair	— @ —	50 @ 1 00
DUCKS, Wild, ℔ pair	— @ —	30 @ 70
VENSION, ℔ ℔	— @ —	13 @ 15
TURNIPS ℔ bbl	75 @ 1 25	1 25 @ 1 75
CABBAGES—℔ 100	1 75 @ 3 75	2 00 @ 8 00
ONIONS—℔ bbl	1 25 @ 1 75	1 00 @ 1 75
POTATOES—℔ bbl	75 @ 1 50	1 00 @ 2 00
SWEET POTATOES—℔ bbl	1 25 @ 3 50	1 50 @ 2 50
BROOM-CORN	7 @ 13	6 @ 12
PEARS, per crate	50 @ 4 00	— @ —
PEARS, ℔ bbl	2 75 @ 8 00	2 50 @12 00
PLUMS, ℔ bush	2 00 @ 4 50	2 50 @ 4 50
GRAPES, ℔ ℔	2 @ 10	4 @ 11
APPLES—℔ barrel	1 00 @ 3 25	1 75 @ 3 37½
CRANBERRIES—℔ bbl	— @ —	8 00 @10 00
PEACHES, per crate	25 @ 1 25	50 @ 2 50
GREEN CORN, per 100	60 @ 1 00	87 @ 1 50
GREEN PEAS, ℔ bbl	— @ —	— @ —
TOMATOES, ℔ bush	20 @ 60	— @ —
STRING BEANS, per bag	— @ —	— @ —
SQUASH, ℔ bbl	50 @ 1 25	30 @ 75
CAULIFLOWER, per bbl.	— @ —	2 00 @ 7 00
PUMPKINS, ℔ 100	— @ —	3 50 @ 4 00
EGG PLANT, ℔ 100	— @ —	3 50 @ 4 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Sept. 20	9,373	65	3,330	32,786	20,572	66,126
Sept. 27	10,160	118	2,750	29,699	19,086	61,813
Oct. 4	10,752	109	2,553	36,282	22,034	72,730
Oct. 11	10,807	84	2,600	36,082	32,661	72,234
Total for 4 Weeks	41,092	376	11,233	134,849	94,353	271,903
do. *for prev. 4 Weeks*	33,520	297	11,286	105,518	71,301	226,922
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	10,273	94	2,808	31,212	23,588	
do. do. *last Month*	9,630	74	2,821	26,379	17,825	
do. do. *prev's Month*	9,216	100	3,336	27,222	22,265	

Beeves.—The market for beeves has been generally unsatisfactory throughout the month. Dealers have lost money through the constant shrinkage in prices which have steadily given way without any permanent recovery. Slaughterers have also lost by the poorer quality of the stock offered. The market has consequently dragged slowly, buyers holding off for concessions which dealers could not afford. Each week has marked a loss of value up to the close, when the market lost a further ¼ to ½c. ℔ ℔, under the weight of a lot of poor coarse cattle, which butchers were not willing to purchase except at a reduction. Prices ranged from 7¼ to 12½c. ℔ ℔ on poor to prime native steers, to dress 54 to 58 ℔s. ℔ gross cwt.; extra and fancy steers sold at 12⅝@13½c. to dress 58 ℔s., and common to fair Texans and Cherokees were forced off at 7¼@9c. ℔ ℔ to dress 55 to 56 ℔s. ℔ 112 ℔s. live weight.

The prices for the past four weeks were as follows:

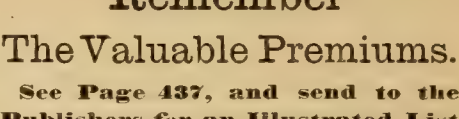
WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Sept. 20	7½@ 13½c.	10½@11½c.	11 c.
Sept. 27	8 @ 13¾c.	10¼@11¼c.	10¾c.
Oct. 4	7¾@ 13¼c.	10 @11 c.	10½c.
Oct. 11	7¼@ 13¼c.	10 @11 c.	10¾c.

Milch Cows.—The offerings of cows for some time past have been very poor, while the enquiry for good stock has been active. The market has been dull for want of salable stock. Poor strippers have been sold as low as $16, and many poor cows for $30 ℔ head, which has injured the market for anything but extra stock. Good cows with calf have sold readily for $60@$80. The market closed dull at $30@$80 for common to choice, and $85 to $108 for extra good and fancy cows....**Calves.**—This class of stock has kept very steady, with fair demand. The prices of veals are now about 1c. ℔ ℔, and grass calves are $3 per head, less than at this time last year. The trade at these figures has been fair throughout the month, and as we close our report, fair to prime veals are selling at 7@9½c. ℔ ℔ live weight, and grassers at $5@$9.50 ℔ head....**Sheep and Lambs.**—There has been a very fair market through the month for sheep at slightly lower prices, which have been marked down ¼c. Lambs have given way ½c. ℔ ℔ on a generally dull market up to the close, when there was a better feeling, and a large business at 5½@7¼c. ℔ ℔ live weight for lambs, and 4½@6½c. for sheep... **Swine.**—The market for hogs has been active at advancing prices. The business of the past month opened at an advance of ¼c. per lb. all round. Another ½c. was gained on dressed soon after, with an active business. Prices at the close were lower, live hogs being quoted at 8c., and dressed at 10c. @10¼c. per lb.

Remember

The Valuable Premiums.

See Page 437, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50

each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Fruit at the Pomological Society.—It is not easy to see why the American Pomological Society should hold a general exhibition of fruit at its biennial meetings; that should be left to the State Societies. It strikes us that only new varieties should be shown at these meetings, and we are at loss to know how the objects of the Society are advanced by showing varieties that every member is perfectly familiar with. At all events the experiment of uniting with a general exposition, as was done at Chicago, is not likely to be repeated. The room was so restricted that some of the finest collections sent were not even opened. Those which were shown were put here and there, some up under the eaves in the gallery, and what was worse than all, visitors were kept by barriers at such a distance from the fruit, that while they might tell apples from pears, it was not easy to distinguish varieties, and as people could not get near enough to read the labels, the fruit collections could not be in any respect instructive. Worse management than this in a fruit show is hardly possible.

Avery Chemical Paint.—The manufacturers of the Chemical Paint inform us that they have essentially reduced the price of the article. Having already stated that we have used this paint satisfactorily ourselves, we are warranted in advising others who wish to paint their buildings, to look into the claims made by the proprietors, and to send to the agents for a sample card and price-list.

Gardening for Pleasure is the attractive title of an attractive work by Mr. Peter Henderson, now published by the Orange Judd Company. This work is prepared to meet the wants of the amateur in-door and out-door gardening. It is one of the best guides to Window Gardening we know of. The fact is, that the number of plants that can be successfully grown in window gardening is very limited, and though it is possible to make a very large list of those which *may* be grown, if unusual pains be taken, the general cultivator wishes only to undertake those which promise to be successful with a moderate expenditure of time and attention. The rules to be observed in order to succeed with window-plants, are very few, and the whole story is plainly told. The work includes fruit, vegetable, and flower-gardening, greenhouses and graperies, window gardening, and Wardian cases. A specimen of the practical character of the work is given in an extract on page 426. It will be sent, post-paid, on receipt of the price ($1.50) by the Publishers.

Improved Spelling.—The following is from the N. E. Journal of Education. Now if they are really going to change the spelling of our mother tongue, in the use of which we floored so many other youngsters at the spelling schools forty years ago, we want a hand in, and so we give our improved spelling in parenthesis, thusly: "Wm. E. Jones (Jons), of Liverpool (Liverpol), Eng., one ov the most zelus laborerz for a revized orthography, and ov the most judishus, writes (writs) under (undr) date (dāt) ov August (Awgust) 3: 'Wud it not be (b) possibel (posibl) to get a convenshon ov speling reformerz ov aul (awl) English speeking (spēking) peepel (pēpl) at the Philadelfia (Filadelfā) Centenial (Senteniel)? It wud be a glorious thing to doo (dō), or even (ēvn) attempt, sō az to hav an interchāing (inturchāng) ov ideas (idēs'). No insuperabel (insupurabl) obstacle (obstākl) stands (standz) in the way (wā) ov carrying (carīing) out (owt) this propozishon. If thoze (thōz) interested wil moov (mūv) at once (wunz) it can (kan) easily (ēzilī) be (b) dun. Wh (hūot) do (dū) our frends (frenz) say (sā).' Shal we (ūe) accept (aksept) this offer (ofr) from (frum) England (Inglund)! I for one (ūne) say (sā) yes! Yours (ūrz) truly, D. P. L."—[Our partially "improved" spelling is given in the parenthesis. But if the thing must be done, we want some new characters for "th," for "ng," etc.—Ed. *American Agriculturist.*]

The Illinois State Fair was held at Ottawa during the week beginning Sept. 13th, and was financially a failure. In some respects the exhibition was a very fine one, and in others very poor. The grounds are not attractive, and the buildings were wretched. Probably a finer show of the heavy breeds of horses, Clydesdale, Norman, and Percheron, was never seen in this country; of four-year-old Normans there were 45, and other classes proportionately large. The same excellence was manifested in the cattle and sheep, and in poultry the collection was remarkable for size and quality. What appeared to us the crowning feature in the exhibition was the machinery and implement departments, which were full and varied, and comprised many implements especially suited to the broad style of western farming. In all that related to horticulture, the display was very meager; a few individuals deserve credit for saving this from utter failure. Our friends of the Prairie Farmer were encamped on the grounds, and to them and to others we are indebted for abundant courtesies. As a guest at the fair, we should be glad to be able to give it higher praise, but to show that our impressions are shared by others, we quote the following from the "Prairie Farmer" of Sept. 25th: "For some reason not easily understood, there seemed to be at this fair a lack of that enthusiasm and good feeling that have been such characteristics of our Illinois exhibitions. We do not believe that the society has for many years held a fair less profitable to the farmers of the state, or one that will be remembered with feelings of so little pleasure and satisfaction."

Asbestos Roofing for Poultry-Houses.—Asbestos roofing-felt makes an excellent material for the roof of a poultry-house, being light, warm, durable, and cheap. It is now made, as we are informed, free from any tarry odor whatever, so that it may be perfectly unobjectionable for use on dwelling-houses. If a strong odor of tar is desired in the poultry-house to render it repulsive to lice, it will be necessary to coat the corners of the building and the ends of the roosting-poles, if not the roof itself, with a roof-coating that has the desired strength of odor.

"Cold-Air Attrition Whole Wheat Flour."—An improvement in grinding the whole wheat into flour has been in successful operation for some time in this country, and we believe elsewhere. By a peculiar process the wheat, previously well cleaned, is driven into a receptacle with great force by a blast of compressed cold air, and by the consequent attrition the grains are reduced to flour; the bran also being reduced to as fine a powder as the rest of the grain. The flour thus produced is free from some of the objections made against Graham flour on account of the coarseness of the particles of bran contained in it. The flour being kept perfectly cool during the process, also retains its properties uninjured by heat as in grinding by mill-stones. The mills now producing this flour are in South Clark Street, Chicago, and their product is coming into extensive use.

The Career of a Prize Cow.—The Short-horn cow Vivandiere, owned by Mr. Outhwaite, an English breeder, has been retired from the show ring, after a succession of victories, in which she has gained no less than $5,357 in cash premiums. During her show career she has bred regularly, and kept in perfect health.

Queen of the Harvest Grain and Seed Separator.—This machine, which is a separator and fanning-mill combined, and is made at Syracuse, N. Y., has been awarded first premiums at nearly all the principal agricultural fairs in the States of New York and Ohio, including the Northern Ohio fair, the Western New York fair, and the N.Y. State Fair at Elmira. One of our associates who has used it, speaks highly of it.

Plowing Lime under the Surface.—"W. C.," Chester Co., Pa. Lime should never be plowed under the surface. It should be sown on the plowed ground and mixed with it by harrowing, or used as a top dressing. It is not advisable to mix lime with manure excepting under special circumstances, and by those who are familiar with its use and behavior when thus mixed.

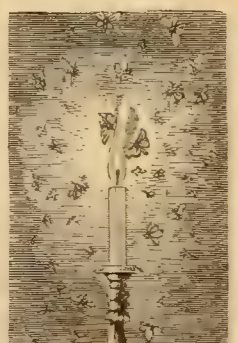
Substitute for Drain Tiles.—"C. J.," Rockbridge Co., Va. Where drain tiles are not procurable, wooden pipes, such as are described in the March No. of the *American Agriculturist*, may be used in place of them. The pipes should be made of chestnut or hemlock if possible; pitch pine or cedar would also make durable drains.

The Urine of the Horse.—"V. D. Van N.," Hightstown, N. J. Horses' urine contains in 1,000 parts: urea 7, hippurate of soda 24, carbonate of soda 9, chloride of potassium 9, carbonate of lime 11, and water, with a small quantity of a peculiar fat, 940 parts. This fat is a volatile oil, and contributes the smell and color to the urine. The urine is rich in nitrogen, to which its high fertilizing properties are due.

Sale of a Guernsey Herd.—A herd of twelve Guernsey cattle, of which nine head were imported a year ago, by the Massachusetts Society for Promoting Agriculture, are to be sold at the Bussey Farm, near Boston, on November 3d. These cattle were selected by the President of the Society, Mr. Thomas Motley, who visited Guernsey for that purpose. They will be sold in small herds of 1 bull and 3 cows each. For the sake of these valuable cattle, it is to be hoped that they will fall into the hands of those who will appreciate them.

GOOD THINGS FOR ALL, Very Cheap, Easily Obtained Free.—Let **EVERY** reader understand that he (or she), has an equal opportunity with any one else, to obtain one or more very desirable and valuable articles, **without expense,** and with little trouble. **OVER 16,000 others have done this,** and now we want at least **40,000** to do so, that is, at least one at or near every Post-office in the United States—also others in British America, in Australia, and elsewhere. The particulars were given in an extra Supplement last month, and in part on page 437 of this paper. **NOW** is the time to begin, as subscriptions for 1876 are now received without extra charge from this time onward to the end of 1876.

Sundry Humbugs.



We have more than once stated that the whole system of humbugs from the great Kentucky Library Lottery, down to the meanest ten-cent swindle, had its foundation in a certain weakness in human nature. There are men and women who pass their lives in trying one quack medicine after another; the fact that the last one failed does not in the least prevent them from trying the next new thing; and this same weakness in other people takes a different direction: another class are continually trying their "luck." They have an idea that somehow they shall get rich without work if they can only hit upon their "luck," and these spend what money they can earn in the vain pursuit of something which will render work unnecessary. These two classes are incurable, and so long as these poor moths exist, so long will the swindlers supply a flame in which they may singe themselves. We do not issue our warnings to such, but to those whose little knowledge of the world makes them easy victims; persons, and especially young persons, who being honest to the very core themselves, are unable to conceive that others could be base enough to perpetrate an out and out fraud. Another class, who though naturally shrewd about matters they understand, are taken in by plausible statements in respect to things they are not familiar with; these are the people who get "stuck" on the "put" and "call," and "spread" and "special privilege" business, and the various charitable gift concerts and distributions. Persons like these, and others, which we cannot now specify, are at once put upon the right track by our exposures of humbugs; these need only to see a danger to avoid it, and all of its kind, while the class first mentioned fall into one, and as soon as they recover, go right on to the next; they are bound to "learn by experience," and nothing will prevent them. Many good people living at a distance wonder why the "authorities" in New York permit the

VARIOUS SWINDLING

schemes. The governing of New York is a matter past the understanding of even those who live there; perhaps we should know more about it did we reside in the city. If a stranger in New York wishes to try his hand at gambling, let him go about the streets until he sees one or two policemen standing in front of a house; if these policemen are apparently stationed there, as he can ascertain by a little watching, all he has to do is to walk boldly in and find an abundant opportunity to lose his money. It is quite possible that the authorities station the policemen at these places as a warning, but they answer as a capital sign. Within two blocks of this office is a house that has been known to old residents in the city as

A GAMBLING HOUSE

for the past 40 years. We pass it twice almost every day we are in the city; there is one, and often there are two policemen standing on the steps or on the walk in front of the house, and we cannot see what other purpose they serve than that of a sign. We see people go in without molestation, the place is known as a "hell," and has been for more than a generation. Innocent people will

ask "Why is it not broken up?"—As we do not know the relations between the directors of those places and the directors of the police force "we give it up."—"What a wicked city New York must be!"—will be the comment of many a good person who reads this. It is a wicked city, but no city gives more, in proportion, to every religious, charitable, and other good work than this. It is only more wicked than other cities than it is larger; every city has its sewers and slums, both material and moral. Take a smaller city, like Chicago for instance, this is celebrated for its

BUNKO-GAME.

In former articles we have given an account of the rascals in N. Y. who accost strangers on the streets, claiming acquaintance with them for the purposes of swindling. In Chicago this is reduced to a system. These fellows called "Bunko steerers" are around hotels and other public places, and carry on their game openly. They are very glad to see Mr. Jones.—"But my name is Johnson," says the victim.—"Oh yes, Johnson, ah I had forgotten, both begin with J. Well, how did you leave all the folks? Your wife was a little ailing when I was down at your place."—"What," asks the innocent, "were you ever in Prairieville?"—"Prairieville! I should say so, know it all to pieces; and old deacon—deacon—I have forgotten his name just now, he keeps a store just at—" "Oh, you mean Deacon Simpson."—"Ah yes—bless me how I do forget names." And so they walk along and talk about the people of Prairieville, the Bunko man adroitly drawing out enough to enable him to make the stranger think that he knows him and all his surroundings. At last they stop in front of a stairway, and the Bunko chap says: "By the way, you have heard of our Young Men's Christian Association, walk up and I will introduce you. Capital place to come and rest when you are tired. Doing a good work here," and much more. Stranger goes to the rooms, is received by a chap in spectacles and a white neck cloth, who is "superintendent;" another chap still more clerical in dress comes in, and is introduced as manager. At last Bunko man asks the others, "How about that Slickville church enterprise?"—"Three hundred coming to you," is the reply.—"You see," says the Bunko man, as he pockets the $300, "we have a little scheme for helping these needy churches. We take shares among ourselves, and then to make it interesting, we have a drawing; if we lose it is all for the good of the cause, and if we gain, we have so much the more to invest on the next one. Now as I have made $300 on the Slickville church, I will spend $200 of it on—what churches are we helping, Mr. Smooth? Ah, the Hardscrabble, yes, I will take a chance at the Hardscrabble. Capital place that, people poor but pious, need help; good society, excellent pastor, but the church is a disgrace. I will put $200 into the scheme, and perhaps my friend Johnson here would like to help by taking a share. It is a little plan that a few of us have. Ah, $25, Mr. Johnson will invest. The beauty of this plan is its quick returns. We make a distribution every day by this system. We soon will know the result. Ah! here it comes, one hundred to Mr. Johnson for his $25, and I only get my $200 back again. Well, good morning, Mr. Smooth."—Stranger has by this time become interested; he thinks this a capital way to help poor churches. He wishes to benefit them some more at this rate; he learns that there are two churches to be aided to-morrow, and he invests $50 on each. To-morrow he is on hand promptly, he notices there are more persons present than he saw the day before, and they do not all look so clerical; at last the result is announced; he is informed that this scheme is a "double ender," and this time he has lost $500. He sees that he is a victim, and will leave in disgust, but finds he is a prisoner, and must pay down the $500 or what money he has, and leave his watch or any other valuables, to help make up the deficit. When liberated, minus all his valuables, the stranger goes to the police office, and they will "see about it." These Bunko places are as well known to the police and residents of Chicago, as are the gambling holes to those of New York. A merchant of our acquaintance took up the cases of some of the victims and tried to prosecute them. He soon was convinced that the Bunko men had more influence with the police than he had, and after he was obliged to abandon the cases, he was called upon by the Bunko men to congratulate him on his success in breaking up their business. All the rascality is not confined to New York, "For wheresoever the carcase is, there will the eagles be gathered together."

THE MONTPELIER, (VA.), FEMALE HUMANE ASSOCIATION

seems to have got into trouble. In answer to inquiries we have more than once stated that it was nothing more or less than a lottery, and that is equivalent to saying that we look upon it as altogether wrong. In regard to this, and in answer to inquiries about other lotteries, we would refer to the Humbug article in March last, where our reasons are given for regarding *all* lotteries, no matter how honestly conducted, as pernicious. We have regarded this Montpelier affair as a specially dangerous lottery.—"But," it will be asked, "is it not endorsed by the Governor, several ex-governors, and other gentlemen of the highest standing?"—Yes, and that is just what is the matter; a common lottery might meet with very little success, but the countenance of these worthy persons has lifted this above the common run of such schemes, and thus made it all the more dangerous, because all the more tempting. If we are asked why these distinguished gentlemen gave their names to a scheme which we denounce, on general principles, as wrong; we can only answer that it is one of the failings of human nature to sign certificates. There are very few men who do not feel flattered at being informed that their name carries such influence that it is sought to help a large enterprise. This scheme being represented as one having for its object the relief of unfortunate females, they think it must be laudable, and so, without investigating the machinery, or thought that they are aiding a gambling scheme, they in a moment of good nature, give their signatures, which are afterwards most industriously paraded on show-bills and circulars in large type with full titles. The drawing of this Humane Female Concern took place on Oct. 1st, and the daily papers since then report great excitement at Alexandria, where it took place; it is alleged that the wheel had been tampered with, and various other charges are made against "persons from New York," who it is said had the management, and the Alexandria correspondents of the New York daily papers speaks of it as "generally believed to be one of the greatest swindles ever perpetrated." One man all the way from Montana is in distress about his $50,000 prize. If he does not get it we say "served him right." Lotteries are wholly wrong, and as to their being for a benevolent end, that does not help the matter, there being high counsel that we "do no evil that good may come." When tempted to invest in doubtful schemes by an array of respectable names, it will be well to remember that those of the highest and best in Virginia did not prevent the affair which they so signally helped, from being called a "Lottery Fraud" and a "swindle." [Since the foregoing was written this Montpelier affair turns out to be even worse than then stated. —ED.]....The country is being flooded with circulars of a

GENERAL AVERAGE SALE,

which is just the "Prize Package" dodge over again. It is claimed that goods, such as they may be, bought at wonderfully low prices are put up in boxes, a general assortment, some lots being worth more and some less. The boxes are marked $5, $10, $15, $20, $25, and $50. If any gooney sends either of these sums, a box is drawn from the lot marked with the value and sent to him. We should think these averagers might have two sets of boxes for the two sexes; a bachelor would be as much puzzled to know what to do with lace collars and cuffs, as a maiden would should she get a meerschaum pipe, provided they receive anything so valuable as either. Our opinion of unusual methods of selling goods has been frequently given....Complaints continue to come concerning

NURSERY AGENTS AND TREE PEDDLERS.

We have already devoted quite as much space to this subject as should be spared. Some persons finding that they have agreed to pay very high for the articles they have ordered, ask what they shall do. They have signed an agreement to take certain trees and shrubs at a given price; if the articles are delivered in good order, there is but just one thing to do—stick to your bargain, and look out better next time. If, as some have done, you have *agreed* to pay 50c. apiece for currant bushes, which can be had of the regular dealers for $2, and at most $3, the dozen, we do not see how, now that you have discovered the mistake, the bargain can be repudiated. Send to the regular dealers who advertise, and get their catalogues and order from them the next time... One correspondent complains that he bought wild goose plum trees and got wild cherry trees. Well, cultivate those wild cherry trees, and keep them as a warning against buying any fruit from irresponsible parties.

MEDICAL MATTERS

are unusually dull; we always expect a stock of novelties for the fall trade, but find only one new nostrum in our budget, and this rejoices in the high old Latinish name of "Scrofcuro," and has its virtues set forth in admirable alternation of red and black ink. A cynical gentleman of our acquaintance says that he will not admit that health is desirable, as it then follows as a logical conclusion that in order to secure health he must take certain quack medicines. This manifesto is after the logical style of those which meet you with the conundrum "Is health desirable?" It quotes Leviticus to show that "The Blood is the Life of the Flesh," kindly informs us that "These are the words of Holy Writ." The evils that follow impure blood are duly set forth. We are treated to the stunning statement that "Nature's Laws are Simple and Wise," and as "Almost every one has a humor of some kind," (we know of some very ill-humored people), and what is more, "It is a melancholy fact, but true nevertheless," various diseases result from impure blood, and diseases of the brain, and then comes the climax. "Such diseases can *only* be cured * * * with our Scrofcuro Medicine."—Yet this stuff will probably have its run. It has been in our way to see all the various quack medicine circulars for over a third of a century, and we have seen scores, yes hundreds of these "only sure cures" come up and go down again, having left no more trace than the fashions in bonnets of the time. Still the "certain cures" continue to come. This Scrofcuro circular has for a picture of its factory a view of the establishment of B. Brandreth, once of pill notoriety.

Poultry Keeping.—"C. J. B.," Memphis. There is no doubt that the production of poultry may be made profitable. A pound of fowls' flesh may be produced as cheaply as a pound of pork, and it rarely ever sells so low as pork. Then there are the eggs and feathers for additional profit. Eggs and poultry may be sent with profit at least 100 or 200 miles to market.

Bee Notes will be found on page 438.

Making Seed Oils.—"L. S.," Springfield, Ohio. It will not pay a grower of castor beans or flaxseed, to make oil from his crop himself. The profitable manufacture of oil requires heavy and costly machinery, and the use of much capital. It is a necessary division of labor for many to supply the material and one to work it up. We know of no book specially treating of the manufacture of seed-oils.

Husking Corn by Machinery.—A remark in a recent article in the *American Agriculturist* to the effect that a perfect corn-husker was greatly needed, does not seem to have been correctly understood. The intention was to stimulate the efforts of the thousands of mechanical inventors, who are continually on the watch for needed improvements, to produce such a machine as shall not only husk the corn as well as it can be done by hand, but shall also pick the ears from the stalks as they stand in the field. A machine of this kind would lessen the cost of the production of corn considerably, and is one of the improvements which are much needed at the present time. To start with, we have an excellent corn-husking machine, the Philips Spiral Corn-husker, which with a two-horse power does the work of ten men equally well as by hand. If this machine could be adapted to the work of picking the ears from the stalks as they stand in the field, the great need of the western farmers who grow corn by the hundreds of acres, would be met. As it is, this machine is very useful, and does well what it promises. We have recently seen it husking corn, very green from the field, as well as could be done by hand, at the rate of a bushel per minute. To do this is perhaps as much as we can hope for at present, and is a very acceptable help, and all that many farmers will ever need.

Manual for Rifle Practice, by Col. Geo. W. Wingate, and published by W. C. & F. P. Church, N. Y. The fact that this work has reached a 5th edition, is sufficient indication of the esteem in which it is held by riflemen. In the present edition the author has incorporated the suggestions of Col. Gildersleeve and others of the famous "American Team," and it seems to be very complete in everything that pertains to the now popular and useful practice of rifle-shooting. Sent from this office by mail, for $1.50.

Drawing Manure in the Winter.—"J. E. S.," South Berwick, Me. If the labor can be done cheaper now or in the winter than in spring, we would certainly haul out manure to the fields now. Do not pile it in small heaps, but in one large one in the center of the field to be manured, made in such a compact way that it will not freeze, but ferment and rot, and become fine by the time it is wanted for use. It will then be easy to spread it.

Such's Catalogue.—Mr. George Such, South Amboy, N. J., sends his catalogue for the autumn of 1875.—It is no disparagement to other florists, to say that his catalogue deserves a special notice, as no others are in the same branch of business, *i. e.*, of offering the most choice and expensive stove and greenhouse plants. The catalogue has attracted notice even in England, where such collections are not rare, and every florist takes pride in the fact that there is one place in the country that offers as fine plants as may be found anywhere. It is fortunate for Mr. Such that he lives where no one, unless he really wishes to purchase, will visit him, otherwise he would be overrun with visitors, drawn by the best collection of plants in this country, and one of the best in any country. A perusal of his catalogue makes one wish that his bank account was equal to that of an Astor, a Lick, or some other millionare. It is very tempting to those of moderate means as well.

☞ Subscribe **this month** and get the **December** Number FREE. Read about the "**Beautiful Pictures,**" on third cover page. **See the Premium List** Table on page 437. ☜

Kew Gardens, (near London, Eng.), as appears from a late annual report, was visited during the past year by 699,426 people, over 15,000 more than in the previous year. The range of daily attendance was from 15 on December 8, to 50,739 on August 3. In the way of exchanges, 4,762 plants, and 2,656 packets of seeds have been received from 277 donors; and 7,975 plants of all kinds, and 4,136 packets of seeds were sent out to 157 recipients. The Herbarium has received 22,000 specimens. A new Herbarium building is to be erected; and a laboratory for physiological botany attached, through the liberality of Mr. Todrell, who is to found and endow it. The system of evening lessons and lectures for the young gardeners on the establishment, is likely to be developed into a school of instruction.

Prof. Morse's First Book of Zoology, lately published by Appleton & Co., (190 pages, 12 mo.), is one of the best books for any active-minded reader of the *American Agriculturist* to have, who is accumulating a small library of books for his own instruction, or that of his children. It is a book of the proper sort to teach young people to see and to think—a part of education apt to be much neglected—and those who, with minds awakened, and curiosity stimulated by a glance at the Professor's beautiful delineations and clear descriptions, "wish to gain a general knowledge of the structure, habits, modes of growth, and other leading features of the common animals of the country," it shows how to do it, how to collect, handle, and to prepare the specimens for study or preservation. The figures are new and original, made from the animal expressly for this book, with very few exceptions; and those who have seen the author at the blackboard, need not be told that they are spirited and telling. The volume begins with fresh water shells, goes on to land snails and sea snails, muscles, clams, and oysters, then devotes about half the pages to insects and spiders; craw-fish and lobsters, crabs and the crustaceans are then made to live before us; the earth-worm and its relatives are then described and illustrated; and finally the characters of vertebrates are sketched, and leading ideas of natural groups are briefly indicated. It is the book to begin zoology with, either with or without a teacher. In due season, we hope Prof. Morse will prepare another, to show the pupil how to go on further.

The Value of Pedigrees.—"M. J.," Chicago, Ill. The pedigree of an animal is not always to be taken as a criterion of its value. Still the fact that the sire and dam of an animal were known to be excellent animals, is to be held as a probability but not a proof that the progeny will inherit the parents' excellencies. The fact that an animal is what is called a "herd book animal," and has a recorded pedigree, unless it comes of a well known strain or family, is not sufficient to indicate its value. The purchaser should always see what he is about to buy, or purchase from a breeder whose judgment and honesty are to be depended upon. Some promising bulls are getters of poor stock, and the reverse is equally true of some bulls that are not of promising appearance.

The New York State Fair.—The thirty-fifth annual fair of the New York State Agricultural Society, held at Elmira, was the most successful one that has been held in many years. It had the merit of being purely and simply an agricultural fair, and its success, in spite of the fact that a driving park was in full operation near by at the same time, proves very clearly that farmers will support a fair at which the horse race is not offered as an attraction. There were nearly 4,000 entries; 333 of horses, 331 of cattle, 251 of sheep, 147 of swine, 532 of poultry, 1,008 of farm produce, 850 of fruit and flowers, and 374 of implements and machinery. Amongst the more noteworthy new things, were a herd of Norfolk red polled cattle, exhibited by Mr. G. F. Taber, of Patterson, N. Y.; a collection of farm produce, consisting of 253 articles of fruit, grains, grasses, roots, cheese, butter, wine, vinegar, cider, jellies, preserves, and other productions of the farm, exhibited by M. C. Baldwin, of Chemung, in competition with other similar collections, for a premium of $100, offered by the Elmira Farmer's Club; also a self-binding attachment to a reaper exhibited by the W. A. Wood Company, which however uses wire, an objectionable material for the bands. The collections of fruit and flowers were very fine; the first premiums for the former were taken by Ellwanger & Barry, and for the latter by James Vick, both of Rochester. The attendance was large, as many as 30,000 persons entering the gates on one day.

Why the Peaches did not Sell.—"A." writes as follows: "Allow me to give another reason besides that of a *New Jerseyman* in the October number of the *American Agriculturist*, and that is, because they are often so *small* and so *unripe*, that no one with an appetite less fastidious than that of the pig, cares to eat them. If the peach growers would thin their fruit one-half to three-fourths of the peaches set, they would get more full baskets than they now do by letting all grow, because they would acquire so much larger size. If then they would let the remaining ones hang on the trees until nearly ripe, they could send an eatable article to the market, which would be readily purchased at an *extra price*. I have picked over 400 to 500 young peaches from single small trees in my orchard, and then I had left more fruit on them than they could grow to a good size and properly ripen. I have occasionally picked seven-eighths of the peaches set after blossoming, and found this one-eighth of more value than if I had left any greater number on the trees.'—The foregoing is from a fruit grower of wide and long experience, and it is gratifying to see that one whose opinion is of so much value, takes precisely the same view that we express in an article on another page.

Books upon Poultry,—"L. A. F.," Fitchburg, Mass. To get a thorough understanding of poultry matters, one should read carefully all that has been published on this subject. There are several books upon poultry, written by experts at the business, and published or sold by the Orange Judd Co., and any one of these will give a fair but not a complete idea of poultry keeping. If a more extended knowledge is desired, it would be as well to study as much of what has been written on the subject as one's means will allow.

An Inexperienced Poultry Fancier.—"C. M. K.," Lynn, Mass. To see how an experienced poultry keeper manages his flocks, would be of more use than many pages of instructions to a beginner. Mr. F. J. Kinney, of Worcester, Mass., raised over 1,000 chickens last season, and a visit to his yards would doubtless be of great service to any one who is seeking information as to poultry keeping. The best time to begin is undoubtedly early in the spring, and with a small flock of the last year's birds.

As to Muck.—The constant accession of new subscribers to our lists, makes it necessary, in reply to their inquiries, to repeat that muck is best used as a material for bedding in the stables or in the yards. Raw muck is of little use, but when mixed with manure and fermented, it is of great value. One load of good manure composted evenly with ten loads of air dried and seasoned muck will set the whole heap fermenting and decomposing.

A Prolific Cow.—A gentleman who lives at Tenafly, N. J., says he has an Ayrshire cow that has just given birth to triplets, (2 heifers and a bull). The same cow had twins about 2 years ago, both bulls. She was 7 years old last January, and has had 9 calves.

Feeding Sheep for Profit.—"C. A. C.," Orange Co., N. Y. It is impossible to say if any person could buy 100 sheep and all the requisite feed for them for one winter, and sell them in spring with a profit on the operation. The profit depends wholly upon the individual. If he is not experienced with sheep, he would probaly fail to get his money back again without loss. If he knows his business, he can generally make a profit in such an operation as this. An inexperienced man should buy a small flock of 10 or 20 ewes, and one ram, and keep them for one season, raising the lambs, rather than try to do more than this at first.

A "Patent Phosphate."—"J. A. R.," Columbia Co., Pa. The following mixture, viz., 600 lbs. bone-dust, 200 lbs. oil of vitriol, 150 lbs. sulphate of soda, (common glauber salts), 50 lbs. muriate of soda, (common salt), 300 lbs. gypsum, 7 bushels of earth, and 10 lbs. of nitrate of soda, is not a super-phosphate nor a bone-phosphate, but simply a mixture, which is an unfit thing to be protected by a patent, if it really is patented, which we doubt. It would be cheaper to buy a genuine super-phosphate than to make this mixture.

Thick Sowing or Planting.—"R. H. B.," Elkton, Md. It depends both upon the character of the soil and the kind of crop, whether the planting or sowing should be thick or thin. For wheat, oats, rye, buckwheat, and peas, the seed should be thinly sown upon rich soil, and thicker upon a poor one. These plants spread either greatly at the root or branch, when growing thinly upon rich soil. On poor soil they are unable to do this, and enough seed should be sown for the crop to cover the ground without spreading. Corn, potatoes, beans, and other crops of similar growth, which do not spread, should be planted thickly on rich soil, to discourage the growth of leaf and stalk, and encourage that of ear, root, or pods. On poor soils these crops should be planted widely apart, to enable the plants to find enough nutriment in the soil to live and produce a harvest. The proper limits of thin and thick sowing and planting, depend very largely on personal experience, they can not be learned from another person who does not know the character of the soil perfectly.

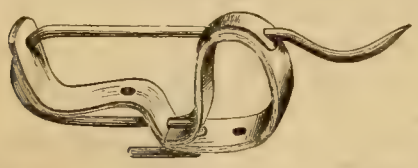
Reading the Advertisements Pays, whether one wants to buy anything or not. Every business man has his own way of setting forth his goods or wares, and studying these business announcements awakens new ideas in the mind of the reader. We have had some of our most valuable new business thoughts start up when running over advertisements on entirely different subjects....There is one satisfaction in reading the advertisements in this journal, that it affords in few other papers, viz., that the editors and publishers aim to shut out all unreliable and deceptive persons and things, so that one may read the business pages with confidence....The advertising pages are in one sense a "Grand Bazaar," where sellers and customers may meet for mutual acquaintance, and consultation and discussion. We introduce the dealers to the readers, and whenever addressing these dealers, please let them know you formed their acquaintance in the *American Agriculturist* Bazaar.

Speak a Word for the German American Agriculturist.—For 16 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Insects and Smut and Potato Rot.—What has become of our friend A. S. Fuller? His name stands as one of the editors of the Rural New Yorker, and we supposed he looked out for the entomology in the pages of our esteemed cotemporary, but of late some very queer things have been published in the Rural, which lead us to suppose that Fuller must be away from his post. It recently published with something like commendation, and with nothing like dissent, a report made to a Farmer's Grange on the "Cause of Smut in Wheat," which contains more absurdities than we often see in print. Notwithstanding the fact that the history of the minute fungus which produces the smut in wheat, is well known, this report ascribes it to a "small brownish bug," which makes its appearance soon after harvest time, and "deposits its eggs in the cleft of the wheat." The eggs are sown with the grain, "and when germination takes place, these eggs are enveloped in the plume, and carried upward in the future growth of the stem." Now as the "cleft" is upon one side of the grain of wheat, and as the "plume" starts from the other side, we should like to be informed how these eggs can possibly be "enveloped in the plume." According to this wonderful account, the eggs are hatched, and the resulting worms go to work on the joints of the stem. Just here we are treated to a new wrinkle in vegetable physiology: "These joints perform the important office in vegetable economy, of securing from the vegetable circulation the nutritive elements necessary to the proper development of the several parts,"—which is a very clever thing to do. But all along of these "worms" things go on from bad to worse, until "the grain has attained to very near its milk stage, and is full of high and delicate order of vegetable life."—"High and delicate order of vegetable life" is a very high sounding phrase, but what does it all mean? In what respect the "vegetable life" is there any more "high" or "delicate" than in any other part of the plant, we are not told. But the next stage is thus given, "Being now deprived of its life-blood by the little viper, [just now it was a worm], it has warmed into life in its bosom, [wheat has a head,

but we did not know about its 'bosom'], it takes on a sort of vegetable gangrene—and hence its disagreeable odor."—"Vegetable gangrene" sounds well. But the way the vegetable physiology is mixed up, is nothing to what happens with the animal life. We read: "When the worm has completed his work, he bores his way out, and in his new character he is ready to deposit his eggs for another summer campaign." Fuller, this is pretty tough entomology. By worm, we suppose that the aforesaid larva is intended, and while it is news that larvæ lay eggs, it is not less astonishing than the information that this is a function of the male larva. "His eggs," indeed! Would it not be well for those who report upon obscure subjects, like smut in wheat, to granges and other associations, to first ascertain what others have done in the same line; they might begin with the treatise of Sir Joseph Banks, in 1805, and follow it up to the present time, and find that a great deal has been done in the way of careful investigation. That a journal of the present day should publish such crude matter, is strange, but still more strange is it that it should give a quasi endorsement to the aphis origin of the potato rot. In a notice of this we meet with the following assertion: "As the microscope has been little used in studying insects, this fact satisfactorily accounts for the previous lack of knowledge of the subject." The first work (so far as we know) published on microscopic matters, Leeuwenhock, 1687, is about half devoted to the minute anatomy of insects, and if the writer of that remarkable statement would know what has been done since, let him turn to Siebolds' "Anatomy of the Invertebrates," where he will find in Book 14th, an amount of references, which will show that the microscope has been used a great deal "in studying insects," and to some purpose. We are surprised to see such statements in a journal which has so accomplished an entomologist as Mr. Fuller in its editorial corps.

A New Corn-Husker.—Many of our readers who have not yet finished husking corn, will be glad to know of the handy little husker shown in the annexed engraving. It is made of a stout bent wire, and attached to a leather strap by which it fits in the easiest possible manner upon the hand, the forefinger going through the upper loop and the others through the lower one; the wire then being grasped in the palm of the hand. This husker is sold for 25 cents each only, and is made



by Chambers & Quinlan, of Decatur, Ill. The comfort of such a husker as this would enable one to husk at least several bushels of corn more in a day than with the ordinary wooden or iron husking-pins.

Lyman Reed's Cause and Cure of the Potato Rot.—One of England's most distinguished men of science sends us a personal letter, which, being private, we can not print. He has received one of Lyman Reed's circulars, and his letter fairly shouts—if a letter can shout—with astonishment, and he wonders if such things can be believed here. To answer our friend M., as well as inquirers in this country, in regard to this matter, we briefly state the case. Mr. Lyman Reed ten or more years ago, claimed that he had discovered that the potato rot was caused by an aphis, or plant louse, and showed us specimens which he thought demonstrated the matter. To our mind it only illustrated the fact that aphides are found on potatoes, and though we saw a portion of a tuber in a bottle, with the aphides said to have been hatched from it, we were at a loss to see how the aphides could any more cause the rot than the "White grub," which often so seriously attacks the tubers, or the many insects which infest the plant above ground. Some members of Congress and other distinguished gentlemen, signed a certificate that they saw aphides apparently hatched from the tubers, and their names are used in his circular. So much for Lyman Reed's claim. Berkeley, Hassal, Cooke, Worthington Smith, and others, in England, find the potato disease to be due to a fungus, which they have thoroughly investigated, and within the present year, as we have recently stated, have made out its complete history in discovering its sexual spores. These gentlemen stand in the very front rank of careful investigators, and they pursue their studies for the sake of the truths of science. They and a host of others have traced the whole career of the fungus of the potato rot, until its history is as well known as that of the potato itself; they have studied all the conditions of its development, and have transplanted it to sound potatoes, and know it from beginning to end—and they have not a thing to sell to cure it. On the continent, Montagne, Payen, and others in France, have arrived at the same results, and the history of the fungus has received valuable contributions from De Bary, and other eminent German mycologists. In this country several have made microscopic observations on the fungus, and a most admirable presentation of a difficult subject to popularize, was recently made by Prof. W. G. Farlow, of the Bussey Institution, of Harvard. Upon one hand we have the most eminent men in their department of science in England, France, Germany, and America, who say, and prove completely, that the potato rot is due to a fungus. On the other hand we have Mr. Lyman Reed, who claims it is due to an aphis. Neither Englishman, Frenchman, German, or scientific American offers any secret preparation or nostrum to prevent the rot, while Mr. Lyman Reed has a "Remedy for Potato Blight and Rot," which he offers at so much a ton.——And that is all we need say about it.

Basket Items continued on page 437.

Catalogues Received.

NURSERYMEN.

W. K. BATES, Stockton, Winona Co., Minn. Fruit and Ornamental trees, especially hardy apples.

P. J. BERCKMANS, Augusta, Ga., sends his general and wholesale catalogue for 1876. Mr. B.'s locality allows him to grow a stock especially suited to the south.

A. BRYANT, JR., Princeton, Ill. Both wholesale and retail lists of a nursery full in all departments, and especially strong in forest trees.

J. CAPPS & SON, Mt. Pulaski, Ill. General nursery stock, with the Alexander Peach as a specialty.

ELLWANGER & BARRY, Rochester, N. Y., whose various catalogues form a small library, send us the 23rd edition (!) of their No. 2, which includes a surprising variety of ornamental trees, shrubs, and plants, and is abundantly illustrated.

FROST & CO., of the Genesee Valley Nurseries, Rochester, N. Y. A very full list from what is now one of the oldest of our nurseries.

HOOPES BROTHER & THOMAS, West Chester, Pa., send a catalogue which, as usual, is very strong in evergreens.

T. S. HUBBARD, Fredonia, N. Y., makes a specialty of grape-vines, but does not neglect other fruits.

A. HANCE & SON, Red Bank, N. J., include in their trade list, greenhouse plants as well as fruit and other trees.

R. S. JOHNSTON, Georgetown, Del., has a general assortment, but makes a specialty of peach trees.

C. C. LANGDON, Mobile, Ala. Mr. L. has now assumed whole control of the well known Langdon Nurseries, and given up his interest in the seed store.

THOMAS MEEHAN, Germantown, Pa. A very full list, including many things no one else would think of.

D. REDMOND, Ocean Springs, Miss., makes specialties of oranges, bananas, and other semi-tropical fruits.

W. S. STRODE, at Ipava, Fulton Co., Ill., makes a specialty of small fruits, but has the large ones.

JOHN SAUL, Washington, D. C., sends a wholesale catalogue which is, as usual, remarkably full.

JOHN C. TEAS, Carthage, Mo., has a general nursery stock, but makes a specialty of stone fruits, and among these puts the Amsden peach prominently forward.

B. F. TRANSOU & BRO., Humboldt, Tenn., offer a large stock of kinds best suited to their climate.

A. R. WHITNEY, Franklin Grove, Ill. Mr. W. is celebrated for his Crab-apples, and has general nursery stock.

D. B. WIER, Lacon, Ill., offers a large stock at low wholesale prices; among other specialties are the Siberian Crabs, of which he has nearly 1,000 varieties.

BULBS, WINTER-FLOWERING PLANTS, SEEDS.

HENRY A. DREER, Philadelphia, Pa. Bulbs, a full greenhouse stock, and various florists' requisites.

PETER HENDERSON & CO., 35 Cortlandt St., N. Y. An illustrated bulb catalogue, also small fruits and winter-flowering plants.

LONG BROTHERS, Buffalo, N. Y. Bulbs, Plants for Wardian Cases, and various other stock.

W. F. MASSEY, & CO., Chestertown, Md., send a trade-list of a full florists' stock, and small fruits.

HENRY S. RUPP, Shiremanstown, Pa., has a special "mail catalogue" for flowers and small fruits, and another for general nursery stock.

SIDNEY WILKINSON, Providence, R. I., sends his trade-list of winter-blooming plants, very full and very neat.

YOUNG & ELLIOTT, 12 Cortlandt St., N. Y., have an annual catalogue of all bulbs and general florists' goods.

EUROPEAN CATALOGUES.

WILLIAM BRYCE & CO., Glasgow, Scotland, send their wholesale list of agricultural and vegetable seeds.

LENAULT-HUET, Ussy, (Calvados), France, sends a most interesting catalogue, mainly of young forest trees.

LOUIS LEROY, Angers, France, (Pabst & Esch, 11 Murray St., N. Y., agents). Notwithstanding the death of the eminent Chevalier, the great establishment of which he was so long the head, is still continued in his name. The catalogue gives an idea of the immense stock, with notes of some new pears, the fruit of which will be exhibited at the Centennial.

P. SEBIRE, Ussy, (Calvados), France. A very full catalogue of young forest trees.

VILMORIN, ANDRIEUX & CO., Paris, France, (Pabst & Esch, Agents), send their "preliminary wholesale seed list," which is very full and abundantly illustrated.

MISCELLANEOUS.

B. A. ELLIOTT & CO., Pittsburgh, Pa. An assortment of florists' goods in iron, or in which iron is largely used.

FRED. MATHER, Honeoye Falls, N. Y. A price-list of fish and eggs, with various wild geese, ducks, and ferrets.

E. STEIGER, 22 and 24 Frankfort St., N. Y., sends a classified list of American and foreign periodicals devoted to the various useful arts, including agriculture and horticulture. Also a catalogue of Schedler globes, and a manual for their use. The globes range from 3 inches in diameter to the large scientific globe.

F. TROWBRIDGE, New Haven, Ct. Waterproof paper and grafting-wax.

J. E. WOODHEAD, Chicago, Ill. Indestructible labels.

Agricultural Journals in General—The American Agriculturist in Particular.

As this is the season when old subscribers renew, and many become subscribers for the first time, we would say to both classes of readers something about agricultural journals in general, and our own in particular. Every now and then we see something in print, the aim of which is to show that an agricultural journal, to be useful, must be published in the state where it is to be read. One of the advocates of this view is Mr. H. T. Williams, who is, among other things, editor of the "Horticulturist." He seems to take a fatherly interest in *agricultural* journals, and having surveyed the whole range of agricultural journalism, he gives "an opinion as is an opinion" in the columns of the "Advertiser's Gazette." His article contains a great deal that is amusing, but we now confine ourselves to what he says under the head of "Changes in Journalism."

"A great change is coming over the future of American agricultural journals. Hitherto it has been possible to obtain very large circulations for National agricultural monthlies or weeklies, circulating all over the United States. This day is now passing by and will never be seen again. The reason is this: American farming is becoming *sectional*, *i. e.*, the climates, crops, seasons, and tastes of farmers of each section differ greatly from those of any other. Each section must have its own rural journal, devoted especially to the peculiarities of the crops where the subscriber lives. His interest is concentrated only in his local paper, and he declines to take anything published far away, however excellent. In my travels west I have noticed this feature very distinctly. Western farmers refuse to take eastern papers, saying: farming and fruit-culture with us are so different from the east, that eastern journals are of no use to us. Southern states must have their own papers, New England her own, and the other states each theirs. The same thing is true in horticultural journals. It is impossible to cover the whole country with one journal, for each section has its peculiar climate and modes of treatment. All those who patronize rural journals in the item of advertising will realize largest returns by spreading their cards over the whole area than to concentrate on one or two. The result, a few years hence, will be no agricultural journals of very large circulation, but a large number of local journals with moderate issues."

The article, from which the above is extracted, is signed "Ed. 'The Horticulturist,' New York, and 'Ag'l Ed. N. Y. Independent.'" Now the plain English of all this may be stated thus: "The large agricultural papers are going to the 'bow-wows,' so don't advertise in them, but come and advertise in the 'Independent,' which is suited to all climes and latitudes." Of course, Mr. W. has a right to entertain what views he pleases of the future of agricultural journals, but he evidently has kept but little run of those of which he predicts with such an air of wisdom. Now we have not a word to say against "local" agricultural journals; if there was a good one in every state, it would be so much the better for us. When people read their local papers, they all the more wish to know what is being done elsewhere. If one wishes to know about these local journals, let him look at our exchange list, and see how many are discontinued within a year; and then he may look at our exchanges, and see how largely these "local" papers are made up from the "national monthlies," the day of which is now "passing

by." There are but few "local" agricultural papers—and by local we mean intended for one particular state—which are prosperous, and if it were not betraying business confidence, we could astonish Mr. W. by naming those which have recently been offered for sale. It is all very well to talk about "local" papers, and encouraging your own journal, but people are so perverse, that they will buy where they get the most for their money. Some of the local papers are very excellent, and we would like to see them succeed, but the *American Agriculturist* is able to give in a single number what costs more than papers of less circulation can afford to expend in a year. Mr. W.'s tailor may show him that he ought to encourage American industry by buying a certain coat, but if a much better coat of English cloth and make is offered him at the same price, he will no doubt take the foreign product. It is just so with journals, people are bound to get the most for their money. Now there is a great deal of nonsense talked about sectional differences, or as the article quoted has it: "the climate, crops, seasons, and tastes of farmers of each section differ greatly from those of any other." If this were the case, which we do not admit, it is the one great reason why a farmer should have a paper from outside of his "section," that he may know what is going on elsewhere. There is also a great deal said about eastern papers not being suited to the western farmers, and much of this is pure *bosh*. When a farmer goes to a new country, he at first has to struggle with the natural condition of things; if he settles on the prairie, he breaks up the tough sod, he builds his sod cellars, and may be a sod-house, and does all his rough work of subduing the prairie in the only way it can be done; if he goes into a timbered country, there is but one way to get his lands into fields; he must chop, build his log-house and barn, and have logging bees, and burn up his timber; he must work among the stumps until they rot, and do all this just in the same way, that all other pioneers have done before him; he needs no paper to tell him how to do this; it is a work of strong arms, time, and patience. But there comes a time to the settler on the prairie and in the backwoods, when he gets beyond the primitive state, and he then wishes to know what he can do to better his condition. Heretofore he has had no time for the conveniences of farm-life; he now is able to put up for himself a good barn, and he would like to know what kind farmers elsewhere build; the log-house has done good service, many happy days have been passed there, but then the girls are growing up, and he can afford a frame-house, and he wishes to know how to build one. He has done pretty well with his dairy, but he has heard that there are better cows for butter; the woman-folks have been talking about fruit, but he has never had any time to plant fruit trees and vines; and he has seen on his journey to town fine vegetables that he would like to have. It is, when the "western," or any other pioneer, has arrived at this point that he cares for any agricultural paper at all, whether "local" or "national," and when he wishes to know what the rest of the world is doing, he naturally selects the journal which seems to him to have the widest scope, and will give him the most varied experience. No state can be more unlike all the rest of the Union, than California, yet their agricultural and horticultural journals are largely filled by quotations from those of the Atlantic states and of England, showing that they regard it as their duty to present *news* in their departments, no matter from where it may come. All these "shrieks of locality," as the political papers have it, amount to nothing. Principles are the same everywhere, the same laws govern plant-growth in Oregon as in Maine; Ayrshire cattle and Berkshire pigs are the best for certain uses almost everywhere. A farmer intelligent enough to take and read a paper, is also intelligent enough to make a proper application of principle to his circumstances, and to know the probabilities of the success of processes that have been found useful elsewhere, upon his soil. The intelligent farmer wishes to know what others are doing, how they have succeeded, and in what they have failed. More than that, he has learned that it is just as well to save a dollar, as to make one, and if he live in that indefinite land, called "the West," he is quite ready to adopt any labor-saving appliance, if it come from the east, north, or south. So much upon general principles. So far as the *American Agriculturist* is concerned, we claim that it is true to its title "American," and that it is of great value—far more than it costs—to every tiller of the soil, whether he be a large stock-farmer, a grain-grower, a truck-farmer, orchardist, or only have a small village garden. And this no matter in what habitable country on the globe he may be. We do not know when these great "Changes in Journalism" (we suppose the "Independent" won't change, and more's the pity) are to begin, but certainly our subscription list for the present year does not show any discouraging symptoms. It may interest the many friends of the *American Agriculturist* to know something about where it goes, and how wide is the brotherhood of its readers. Editorially, we know nothing about the subscription list, except in a general way, but we do know from letters addressed to the editors, something about its readers. Sometime ago we began to keep a memorandum of the editorial letters received each day, jotting down the topics, and the states they were from. These were entirely editorial letters of inquiry, and the record was made to allow us to know the wants of our readers in different parts of the country, in order that we might so far as possible meet their wishes. This memorandum, while it probably does not give the proportion of subscribers in the different states, does fairly show the range of editorial correspondence, and we give the figures, remarking that as a general thing, those the farthest off most generally, asked about things which are to us the nearest home. In arranging our memoranda under states, we find there are 804 letters from within our own territory, and 36 from other countries; in all 840. Had we commenced the memoranda at the end of last year and the beginning of this, the number from abroad would have been much larger, as we find that subscribers in distant countries, where postage is costly, keep what they wish to say to the editors until the time they renew their subscriptions.

States and Territories alphabetically arranged, from which 804 *editorial* letters were received:

Alabama	10	La	5	North Car.	15
Ark.	9	Me	17	Ohio	55
Conn	33	Md.	33	Oregon	8
Cal	15	Mass.	40	Penn.	90
Colorado	5	Mich	20	R. I.	2
Dakotah	2	Mo.	26	South Car.	3
Del	4	Minn	12	Tenn	17
D. C.	2	Miss.	5	Texas	15
Fla.	7	Montana	2	Utah	3
Georgia	10	Nebraska	6	Vermont	8
Ill.	55	N. H.	7	Virginia	28
Ind	40	N. J.	32	Wash. Ter.	2
Iowa.	28	New Mexico	2	Wisconsin	19
Kansas	19	Nevada	1	Wyoming	2
Kentucky	20	New York	70		
					804

From various other countries:

Brit. Honduras	1	Hungary	2	Newfoundland	1
Canada	12	India, (E.)	1	New Zealand	1
Choctaw Nation	1	Mexico	3	Prince Ed. Isl.	3
England	2	New Brunswick	2	Spain	2
France	1	Nova Scocia	4		
					36

In the above list Pennsylvania, New York, Ohio, Illinois, and some others, count up heavily, but when we come to compare the population of these states with that of those which show smaller figures, it will be seen that our correspondence, in proportion to the population, is very largely from the newer and more distant states.

We are not much concerned as to the changes which it is predicted will take place in the "great hereafter," so long as those who, in these widely separate localities, give us constant assurance that our paper meets their wants. We append extracts from the letters of a few correspondents at different points, but as they were not written for publication, we do not give names.

Massachusetts.—A lady writes from Woburn: "For long the *American Agriculturist* has been a household treasure."

New Hampshire.—A Subscriber in Hancock, says: "I find many very valuable hints in your excellent paper, and would not part with it for double its cost."—These will suffice for New England, and we omit New York altogether. Looking to the southern states, we find from

Maryland, a farmer writing from North Branch: "It is so interesting to me that I would scarcely know how to do without it."

Virginia.—A lady in Lee Co., says: "I am very much pleased with the *American Agriculturist*. You may count me a life-long subscriber, and I am trying to induce others to take it, as I think it the most practical agricultural paper I have ever seen; there is something in it to suit every one."

Florida.—A Suwannee Co. subscriber is "taking it now, and I expect to continue. I often feel repaid for the subscription price by a single article in one number, and wish that every farmer could read the journal, and profit by its useful hints and suggestions."...."M. C.," another Floridian, in a letter to the Florida Agriculturist says, and we would here thank our excellent cotemporary for publishing it: "One is very much mistaken if he thinks that skill and experience in northern fields is of no use here. We would dislike to do without the suggestions and facts of the *American Agriculturist*, even down here. The principles are the same everywhere in agriculture."

Looking to the western states, we find many words of commendation, from which we select but a few.

Ohio.—A lady writes from Trumbull Co.: "I have enjoyed the reading of your excellent paper for about 10 years. I have found *every page* well worth reading; you can not say that of many papers."....A farmer in Gallia Co., says: "A word about the *American Agriculturist*; it is what every farmer ought to read. I feel that I cannot well do without it. * * I think it ought to be circulated among farmers, then there will be no cause for going west."... A friend in Summit Co., who read a neighbor's copy for October for 30 minutes, forwards his subscription and says: "This time put me down for life, and don't wait long until you get the Nov. number on the way. My subscription expired with last year, and I felt too 'tight' to renew. Then I made a mistake. *Can't farm without it.* Will come out behind this year just for that reason. The Oct. number is worth the amount I send you; if for any reason you can't send the paper, just keep the money for value received in 30 minutes."....But it may be said that Ohio, Indiana, and Illinois are now old states, and no longer belong to the "far west," we will let these go by and quote from a few that are not open to this objection:

Wisconsin.—We get from Waupaca Co: "Times awful tight. No cash. Cannot get along without the *American Agriculturist*. Lost last year. Manage to send for it this year. Tight squeeze." From

Wyoming Ter.—J. B. S., writes: "It is becoming a household necessity; am sorry I had not found it two years ago."....Here is an interesting letter, too long to give entire, from

Colorado; the writer when he lived in an eastern town took the *American Agriculturist* and had 8 volumes bound. "And many a useful hint did I find there. I was not engaged in farming, but concluded that the useful information, suited to all classes, that I found there well repaid me." When he went west he had to leave his bound volumes behind, but after he became established at "ranching," he sent for the paper and says: "I often feel like writing to you, as though I had an interest in the *American Agriculturist*, and have a right to." We content ourselves with but one quotation from the Pacific coast, where, if in any part of the country, a "local" would be better than a "national" paper; this comes from the orange groves of

California, in Los Angeles Co., and reads: "And one more word, and that for the *American Agriculturist*. I have read every number since Jan. 1871, and would not be without the *bountiful store* of information I have gathered from its pages, for a 'California ranch.' And may it long continue to go on with its noble work."....Our subscription lists show that the *American Agriculturist* meets the wants of farmers in all the English colonies far better than any of their home journals, and we find it taken largely in Australia and in the other islands, in Africa and elsewhere. Both our German and English editions have a large circulation in Germany, and space only prevents our quoting from letters received from that country giving most gratifying assurance of the great utility of the *American Agriculturist* to German and Hungarian farmers. We conclude this already long list of extracts without by any means exhausting the material by one from

Tasmania, which says: "Your interesting and valuable paper is much read in this remote part of the world, because you describe a great many of our difficulties that are not mentioned in the English agricultural papers."....There is at least one "national" paper that does not think its career of usefulness has ended; it is called

THE AMERICAN AGRICULTURIST.

Science Applied to Farming.—XI.

BY PROF. W. O. ATWATER, WESLEYAN UNIVERSITY, *Middletown, Conn.*

More about Digestion of Foods—Practical Information about Feeding.

The question of the influence of potatoes and roots on the digestion of hay, is exciting considerable interest. One correspondent, indeed, thinks me inconsistent, and good naturedly accuses me of leading him astray. His case is, in substance, this. Some of the earlier articles of this series impressed him with the necessity of having the proper proportions of albuminoids (nitrogen) in the food for his stock. He had some clover made into hay for next winter's use, and planned to raise a lot of potatoes, select the largest and best for market, and feed the rest to his cattle. By mixing clover, which is rich in nitrogen, with potatoes containing an excess of carbo-hydrates, he would have a cheap and appropriate ration for his cattle. But the experiments described in the last articles show that potatoes fed with clover decrease the digestion, and so instead of economizing by this plan, he finds that he will lose a certain percentage of the clover which would otherwise be digested and utilized. The way out of this difficulty may be found in the distinction between

Coarse and Concentrated Foods,

to which I have frequently referred. The tables in previous articles have shown in figures what most

farmers know in fact, that some kinds of food are much more digestible than others. From 100 lbs. of the organic substance of hay, for instance, a cow may digest 60 lbs., while from 100 lbs. of the organic substance of meal, she might digest 90 lbs. The less digestible foods are called *coarse*, and the more digestible ones *concentrated* food. The proportions of digestible material in the more common coarse and concentrated foods are shown in the following table, to which especial attention is asked, as we shall have frequent occasion to refer to it:

Table 18.

KINDS OF FODDER.

100 POUNDS CONTAIN

	Total Organic Substance.	Digestible Organic Substance.	The digestible organic substance consists of			Ratio of digestible albuminoids to digestible carbo-hydrates.*
			Albuminoids.	Carbo-hydrates.	Fats.	
A.—COARSE FOODS.						
Dry Hay.	lbs.	lbs.	lbs.	lbs.	lbs.	
Meadow Hay, very poor	80.7	38.8	3.7	37.9	0.5	1:10.6
Meadow Hay, average	79.5	47.4	5.4	41.1	0.9	1: 7.9
Meadow Hay, very good	78.0	50.5	7.4	42.1	1.0	1: 6.
Timothy, cut at first bloom	81.2	50.6	5.8	43.4	1.4	1: 8.1
Red Clover, average quality	78.7	46.3	7.	38.1	1.2	1: 5.9
Straw, Chaff, etc.						
Winter Wheat	81.1	33.1	0.8	31.9	.4	1:41.1
Winter Rye	81.6	33.9	0.7	32.8	.4	1:48.3
Summer Barley	81.6	38 7	1.4	36.9	.4	1:27.1
Oat	81.7	39.3	1.3	37.4	.6	1:29.9
Corn Stalks	80.8	38.4	1.1	37.0	.3	1:34.4
Green Fodder.						
Grass, just before blossom	22.9	15.4	2.0	13.0	.4	1: 7.
Pasture Grass	18.0	12.7	2.4	9.9	.4	1: 4.5
Rye	22.4	13.3	1.9	11.0	.4	1: 6.3
Fodder Corn	16.7	10.9	0.8	9.9	.2	1: 13.
Red Clover, before blossom	15.5	10.2	2.3	7.4	.5	1: 3.8
Red Clover, in full blossom	20.3	11.9	1.8	9.6	.5	1: 6.
B.—CONCENTRATED FOODS.						
Grains and Seeds.						
Wheat	83.9	76.	11.7	63.1	1.2	1: 5.6
Rye	83.9	75.5	9.9	64.0	1.6	1: 6.9
Barley	83.5	67.2	8.0	57.5	1.7	1: 7.7
Oats	83.	55.5	8.9	41.8	4.7	1: 6.
Indian Corn	84.1	71.0	8.4	57.8	4.8	1: 8.3
Peas	84.3	73.6	22.0	49.9	1.7	1: 2.7
Field Beans	82.4	68.0	23.0	43.6	1.4	1: 2.1
Roots and Tubers.						
Potatoes	24.1	23.0	2.1	20.6	.3	1:10.1
Sugar Beets	17.8	16.5	1.0	15.4	.1	1:15.7
Turnips	7.3	6.5	1.1	5.3	.1	1: 5.1
Kohlrabi	12.0	10.9	1.3	9.5	.1	1: 7.8
Carrots	14.1	12.4	1.4	10.8	.2	1: 8.1
Refuse Products.						
Barley Slump (Distillery)	9.7	7.6	1.8	5.4	0.4	1: 3.6
Brewers' Grains	22.2	13.8	3.9	9.5	0.4	1: 2.7
Malt Sprouts	85.2	58.1	18.4	38.0	1.7	1: 2.3
Wheat Bran	81.5	51.9	10.9	37.6	3.4	1: 4.2
Linseed Cake	80.6	60.7	23.8	29.0	8.9	1: 2.2
Cotton-seed Cake (decortl'd)	82.2	55.7	28.8	17.0	9.9	1: 1.5
Western Middlings	85.2	71.7	8.4	61.3	2.0	1: 7.8
Western Shipstuff	85.9	67.8	8.7	57.1	2.0	1: 7.1

* 1 lb. fats is reckoned equal in nutritive effect to 2½ lbs. carbo-hydrates.

The above table shows that in 100 lbs. of average quality meadow hay, ("English grasses"), there are 79½ lbs. of organic substance, 20½ lbs. being water, and mineral matters or ash. Of the 79½ lbs., a cow, or ox, or sheep, digests on the average, 47⅖ lbs., equal to about 60 per cent. Of potatoes, 100 lbs. furnish 24 lbs. of organic substance, of which 23 lbs., or about 96 per cent, is digestible. In general we may say that

Of *Coarse foods*, as Hay, Straw, and Green Fodder, from 45 to 65 per cent of the organic substance is digestible.

Of *Concentrated foods*, as Grains, Seeds, Roots, and Refuse Products, from 65 to 95 per cent of the organic substance is digestible.

Let us now examine one more very important point, to wit, the

Ratio of Albuminoids to Carbo-hydrates, that is to say, the amount of materials which contain nitrogen as compared with those which contain none in the digestible portions of these foods. This is set forth in the last column of figures in the table. The digestible substance of average quality hay, for instance, contains about 7⁹/₁₀ lbs. carbo-hydrates to every 1 lb. of albuminoids. In young clover there would be only 3⅘ lbs., while in straw there would be from 27 to 40 lbs. of carbo-hydrates to every 1 lb. of albuminoids. So the ratio of albuminoids to carbo-hydrates in cotton-seed meal would be 1 to 1½, and in potatoes 1 to 10. Now we are prepared to meet our friend's difficulty. If he mixes hay or clover with some other coarse food as straw, he need fear no loss. His cattle will digest as large a percentage of the hay or clover when these are fed with straw, as when used alone. At least such is the probable inference from such experiments as have been made up to the present time. In uniting different kinds of coarse foods we have, so far as economy of food material is concerned, simply to consider the ratio of albuminoids to carbo-hydrates, and see that the mixture shall contain enough of each, with no excess of either.

In mixing concentrated (easily digestible) foods with coarse foods, the case may be different. Experiments prove that if the concentrated foods are rich in nitrogen, as much of the coarse foods will be digested as if they were fed alone. But if the concentrated food contain but little of albuminoids, and a good deal of carbo-hydrates, less of the coarse may be digested. This loss will increase with the proportion of carbo-hydrates in the concentrated food, and what is both strange and unfortunate, it is chiefly the albuminoids, the most valuable food ingredients, that are lost from coarse foods when concentrated foods with small proportions of albuminoids are fed with them. Dr. Wolff, who has experimented on this subject for years, comes to substantially the following conclusions as the result of his own and other investigations:

1st. Refuse products, as bran, malt-sprouts, oil-cakes, etc., which contain only 1 lb. albuminoids to from 1½ to 4⅕ lbs. of carbo-hydrates, (see last part of table 18), do not decrease the digestion of coarse foods. We may mix these with hay, clover, straw, etc., without fear of loss. Indeed they are very valuable for counteracting the ill-effect of foods containing too little nitrogen.

2nd. Of the grains and seeds, those which contain 1 lb. albuminoids to not over 5 or 6 lbs. of carbo-hydrates (see table), do not appear to decrease the digestion of coarse foods. Such are beans, peas, oats, and wheat, which have a ratio of albuminoids to carbo-hydrates of from 1:2 to 1:6, cause no loss. But grains in which the ratio is 1:7 or 8 will, in Dr. Wolff's opinion, cause some loss in the digestion of coarse foods. According to this, Indian corn with a ratio of 1:8.3 if used with hay, clover, or straw will diminish the digestion. But it seems to me questionable whether the loss would be a serious one. I hope, however, that the effect of corn on digestion may at some time be tested by actual experiment. On the whole, grains, (except perhaps corn-meal), may be used with hay, straw, clover, corn-stalks, etc., without loss to the latter.

3rd. Potatoes and roots, when used with coarse foods without other admixture, seem to decrease the digestion of albuminoids very materially.

Wolff gives some statements as to the actual amount of loss of albuminoids of hay from admixture of potatoes in various proportions. Put into a form to be easily understood, they would be about as follows:

Hay.	*Potatoes.*	*Proportion of Digestible Albuminoids lost.*
10 lbs. with	4⅓ lbs.	0
10 lbs. "	8⅔ lbs.	⅛
10 lbs. "	17⅓ lbs.	⅓
10 lbs. "	34⅔ lbs.	⅚

That is to say, if potatoes are mixed with hay in the proportion of 4⅓ lbs. to 10 lbs., just about as much hay will be digested as there would be without the potatoes. But if 17⅓ lbs. potatoes are fed with 10 lbs. hay, ⅓ of the digestible albuminoids will be undigested and lost, and so on.

The effect of sugar beets would probably be similar to that of potatoes. Turnips, and carrots, seem to cause less loss in digestion, and for two reasons; first, because they contain a smaller proportion of organic substance, and second, because the organic substance is richer in nitrogen. The above figures apply to hay of average quality. Clover and the better qualities of hay would suffer less, while straw and the poorer sorts of hay would suffer more loss of albuminoids. The richer the coarse food is in nitrogen, the less will its digestion be affected by excess of carbo-hydrates in concentrated foods.—If we were feeding for manure only, no loss would come from this decrease in the digestion of albuminoids, since the undigested portion would pass off into the excrement. But if we are feeding for milk, or growth, or work, the loss will be very serious, because the albuminoids are the most important of all the food ingredients for the production of milk, meat, or muscular strength.

It is clear, then, that the case of my misled critic is not so bad after all. If the concentrated food which he uses with his clover have plenty of nitrogen, no essential loss need be feared. So let him feed small quantities of potatoes, and put cotton-seed meal, or malt-sprouts, or brewers' grains, or bran, with them, and he will have a most excellent and economical fodder.

Ogden Farm Papers.—No. 69.

BY GEORGE E. WARING, JR.,

[Col. Waring being obliged to make a hurried business visit to Europe, in order to keep the series unbroken, sends this paper from "the other side."—ED.]

THE BATHS OF BERTRICH, GERMANY,
September, 15*th*, 1875.

I have just finished a tour of several days in a high-lying volcanic region, where the soil is light and rather poor, and where the country people are nearly all land-owners; that is to say, there are few hired laborers among them, nearly all owning some land, if only a very little, and depending upon its cultivation for their chief support. The district has latterly been somewhat helped by sending some of its young men to work in the iron mines of the neighboring provinces, but it may fairly be regarded as a purely agricultural country, with a population more like that of our own older farming regions, than one would expect to find.

I have been much interested in studying some of the peculiarities of the life and manner of working of this people. There are some radical differences between these farmers and ourselves. The women work in the fields almost equally with the men, and so far as I could judge, they are far from being brutalized thereby. They do, as a rule, the lighter work, or rather they do different work; for instance, women never mow, but they do most of the tedding and raking, and seem to do as much as the men in loading the wagons, and in mowing away the hay in barns. The only part of their work that seems to an American exceedingly hard, is the carrying of heavy burdens in baskets strapped on their backs—knapsack fashion. But they are straight, strong, broad-backs, that seem in no way the worse for this work. I am far from recommending the adoption of such vigorous out-of-door labor by our own women, but one can but wish that we had some substitute that would give to our too delicate country women the same degree of ruddy, hearty, robust health that is seen here on every hand. And while one is wishing, it seems almost worth while to wish for a more cheerful social life, like that of the agricultural communities of Europe, where isolated residence seems almost unknown. The whole broad country is without fences and without houses, but every two or three miles there is a village in which the farming families are congregated, and where they have their barns and their herds and flocks. They are dirty villages, and although the houses are, as a rule, cleanly and comfortable within, the streets too often do duty as barn-yards, and are offensive to the nostrils of an American. This, however, is an unnecessary evil—a relic of mediæval barbarism—which any American community would avoid as a matter of course, and it seems very clear that with the American element of refinement, the life of an agricultural people might be made in every way better by this sort of social congregation. Deerfield, in Massachusetts, is the only village that I happen to recall, where this good European custom has its better American development.

Throughout much of the region in question, as well as elsewhere in the valley of the Mosel, I have been struck by the practical demonstration of the value of irrigation carried out very much according to the recommendations given in the last paper of this series. There seems to be hardly a place where a little trickling rill, even a wet weather stream, can be controlled, that its water is not made to do duty over and over again, in irrigating first one and then another of the little parallelograms of land, to which its flow can have successive access; and by this simple means, a light soil of volcanic sand is made to produce an amount of grass that is really surprising. The half-farmer and half-hotel keeper with whom we stayed last night, told me that in his neighborhood—which is as poor as the gravelly hill tops of New England—the well situated irri-

gated meadows are worth about $500 per acre, and this in a country that is by no means over-peopled, and where farm products bring about the same prices that they do in New England—the same price that is, in money. In labor it is very much higher; for these people are extremely frugal, and make their sort of comfortable living by an amount of toil that is almost unknown with us. They live as most of our farmers would not live, and their dress, though sufficient, is very simple. At the same time, since we have been in the country, we have not seen a beggar nor any sign of pauperism; and I was told by a physician who has charge of forty-five villages, within an area of about one-hundred square miles, that in the whole range of his practice, there are only six families who have to be treated at the public cost. From what a traveler is able to gather, it would seem that this very substantial prosperity is due chiefly to industry, frugality, and simplicity of living—but in good degree also to the use of irrigation.

I do not find much in the methods of work here prevailing, that seem better than our own. The implements employed are generally rude and less efficient than ours, and there seems to be less manual dexterity in their use; but in one item we must accord to them a very decided superiority. I refer to their manner of yoking oxen, (or more often cows, for the smaller farmers seem to depend entirely upon cows for their field and road work). In some districts the animals are yoked together, but more often, and it seems to me to be more advantageously, they work independently, and draw by traces like horses. Whether double or

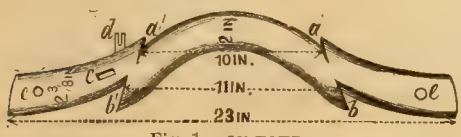


Fig. 1.—OX-YOKE.

single, the yoke is much better than ours, and better than I have seen anywhere else. And whether on the score of humanity, or of the profitable management of one's animals, I can render no better service to the readers of the *American Agriculturist*, than by describing the apparatus. It has always seemed to me that our method of bringing the draft by the yoke on the neck, and by stiff wooden bows close upon the shoulder-blades, is very defective, while the system prevailing in southern Europe, of binding a heavy beam over the forehead, though better, is still unsatisfactory.

The farmers of the valley of the Mosel use a very light yoke, (the double yoke weighing not one-third so much as ours), and bind it on top of the head, immediately *behind* the horns, resting it upon a soft cushion, and fastening it to the horns by a leather thong, in such a way that the chief tension comes over a part of the cushion, which turns down over the forehead,—its front edge

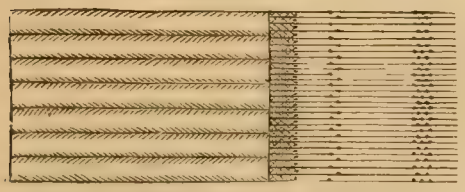


Fig. 2.—CUSHION FOR YOKE AND FRINGE.

being furnished with a fringe of knotted cords, hanging nearly to the nostrils, and serving as a fly net, and a decided ornament.

The accompanying illustrations drawn by measurement from a sample that I am taking home, will enable any one who chooses to try this method. Fig. 1 represents a yoke for a medium-sized ox. The material is oak, $1\frac{7}{8}$ inch thick. The lower part of the curve which rests over the neck is nicely rounded off at both edges, so as to bear easily. The long rectangular hole *c*, about an inch wide, receives the thong which is prevented from slipping through by a knot tied in its end. The holes *e*, *e*, are to receive iron eyes to which to attach the traces. The standard *d*, has a narrow slot or jaw into which to fasten the little end of the thong after the yoke has been bound fast. Fig. 2 is the cushion, (11 inches wide and 17 inches long), which is usually made on the upper side of sheep-skin with the wool on, and on the lower side with canvass. It is sewed in parallel lines about $1\frac{1}{2}$ inch apart, the spaces be-

Fig. 3.—MANNER OF FASTENING YOKE.

tween the stitching being stuffed with wool or hair. Leather or heavy canvass is frequently substituted for the sheepskin, but the latter is best. The fringe is a simple affair; it varies a good deal in form, and it is frequently omitted. Fig. 3 shows the manner in which the yoke is fastened to the head, the thong is of half-tanned hide, 8 or 9 feet long. The yoke being laid upon the cushion, close behind the horns, the thong is carried across the forehead, below the horns, passes back through the notch *b*, is brought over through *a*, passed in front of the horn, then in the same manner through b^1 and a^1, then in like manner around the horn on that side, and then again across and back in the same manner, making four thicknesses of the strap across the forehead. The small end is then wound around the horn and caught in the slot *d*. The weight of the yoke is borne upon the cushion, and the strap against which the tension comes, is also borne by the cushion. The animal's force is exerted in the most natural and strongest way, (by butting against the load), and its head and neck are free and unconstrained. When two cattle are working together, they have leather straps about their necks which are chained together for plowing and similar work, or attached to the hold-back chains of the pole for road work. This arrangement is a good deal better for pulling than for backing, but nothing could be worse for the latter work, than our own system of forcing the head and horns back against a stiff, heavy, and uncomfortable yoke. I live in a country where oxen are much used, and have always used them more or less myself, so that I have been particularly struck with the much freer and lighter action of the animals I have seen here, cultivating the broad hill tops, or going briskly to market or to the hay-field. The difference of speed may be due in some degree to the difference of race, for the cows and oxen here are rather lightly built and more active than ours, but I believe it to be due also to the much more advantageous method of yoking. Carts are not much used here, but when they are, the yoke is double, about seven inches wide in the middle, and has a three-inch hole through which the end of the tongue is passed, thus avoiding the use of our heavy iron ring and staple.

There is one other point, especially observable throughout all these "effete monarchies of Europe," that cannot fail to strike every traveling American with wonder. I refer to the character and condition of the roads. Even in this dry, gravelly soil, naturally well suited for making good roads of our own type, and where there is hardly one wealthy man to twenty populous villages, every road that is more than a mere wood-path is graded and McAdamized, and is kept in serviceable condition by the occasional addition of broken stone. All roads a grade higher, such as those leading to the market towns, to the railroad stations, or to the river villages, are even better than these, while the main post-roads, which take the chief travel, are in every point and in every particular as good as the much vaunted "Drive" of Central Park. Roads of the last two classes are almost invariably bordered on both sides with some small growing tree, giving shade to the road without too much taxing the soil or shading the land. There are several reasons why roads are better here than with us; the most important being that these people have learned that a narrow road is as good as a wide one, even the high roads being barely wide enough for two vehicles to pass easily. Of course roads so made cost in the first construction a very considerable amount of labor, but after that, if they are well watched, the cost of their maintenance is very trifling indeed. One need only see the antiquated, ram-shackle old wagons, which even when new would hardly last a year on our roads, and which are evidently often older than the men who drive them, and see the enormous loads that are drawn by apparently inefficient teams, to realize that the money invested in making first-rate roads brings an enormous annual return in the economy of teams and the saving of wear and tear.

A Farm-House Costing $3,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan of a Farm-House embraces a commodious and convenient interior, with such external features as to clearly express its purpose, and it will be recognized as at once adapted to rural situations and domestic life, providing much valuable space, and affording a variety of pleasing and symmetrical outlines, with due economy in expense of construction. Perhaps the most striking feature is the *breadth* of the front, which is 51 feet. (The average depth is 22 feet 7 inches). As far as practicable, all prolonged vertical lines are avoided, leaving horizontal ones to prevail, as of more practical utility and value. Where opportunities abound for "spreading out," as in the country, it would be obviously incompatible to build tall, or stilted houses, that would not comport with their surroundings, nor provide the conveniences desira-

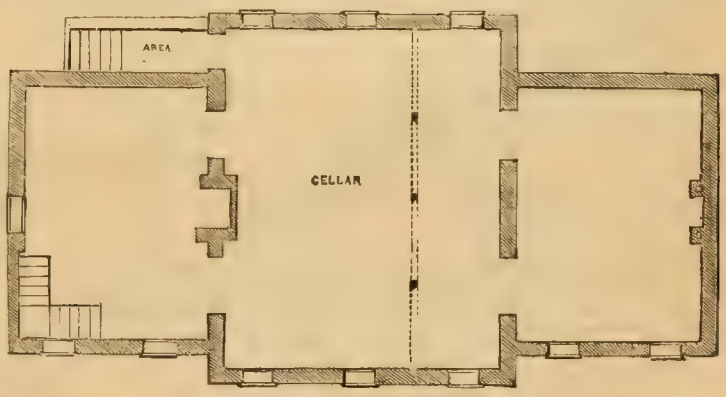


Fig. 2.—PLAN OF CELLAR.

ble in all rural habitations....**Elevation,** (fig. 1).—The general details of the elevation are made up of simple parts so appropriated and balanced, that they harmonize with each other, and secure a graceful outline. The principal or main portions of this building will be observed to be the central one, while the wings at either side are collaterals, that give equipoise and rest to the whole structure. The steep roofs, with their subdued pediments, and spreading cornices, and dormers, the bay and other windows, the wide entrance, and open piazza, are

all arranged so as to correspond with each other, producing an effective and picturesque appearance, There are no efforts at scientific or elaborate dis-

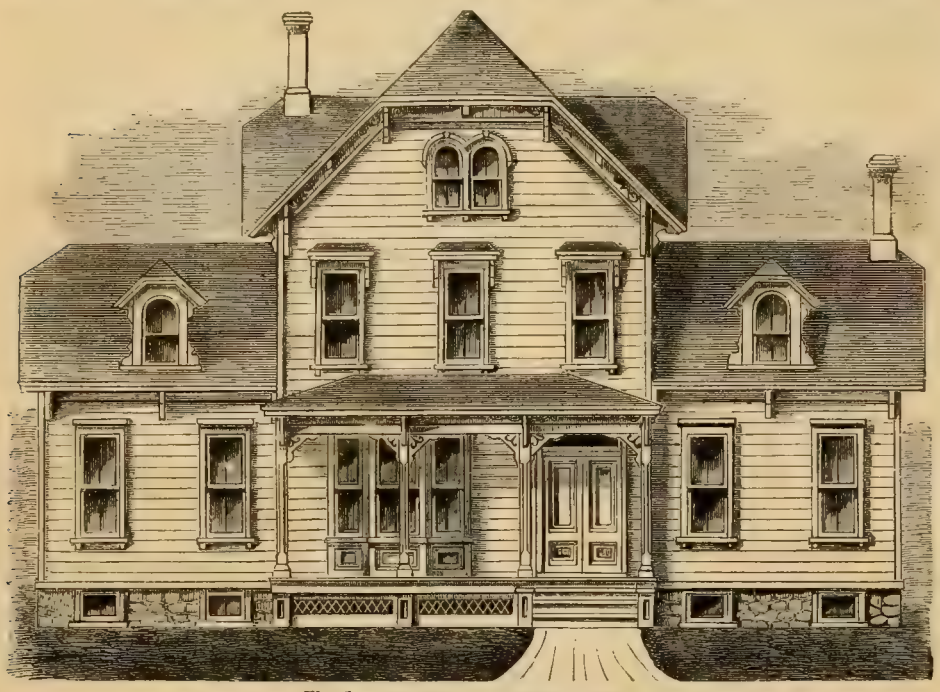


Fig. 1.—ELEVATION OF FARM HOUSE.

play of outside ornamentation, but there is sufficient architectural completeness to denote social cultivation and refinement....**Interior.**—The plans given last month were designed more especially for an *eastern* frontage. These plans are particularly adapted for a *southern* frontage....The **Cellar,** (fig. 2), extends under the whole house, and is 6½ feet deep, [7 or 7½ feet is always better. ED]. An outside entrance and area are to be built and inclosed under the stoop at the rear. Eleven small windows are provided for both light and ventilation....The **First Story,** (fig. 3), has ample apartments adapted to the uses of a large family, embracing a good sized *Hall*, *Parlor*, *Living-room*, *Kitchen*, *Pantries*, *Closets*, and *Corridor*. The principal entrance is from the piazza, through large double doors to the hall. Similar double doors on each side of the hall lead to the parlor and dining-room. These inside double doors enable one to throw the whole together for large family and other gatherings, and are manifestly appropriate in dwellings of this character. The principal Stairs are semi-circular, so arranged as to occupy but little room in the principal hall. The Parlor is situated by itself, remote from the machinery of daily

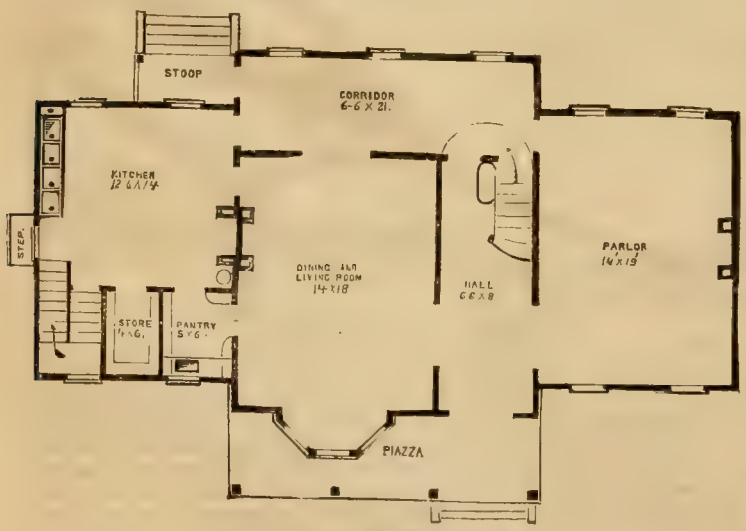


Fig. 3.—PLAN OF FIRST FLOOR.

housework. The Living-room is the most central, and most convenient and comfortable room in the house. It is so surrounded by other apartments that summer's heat, nor winter's cold, can have direct access to its sides. The large Bay window affords an ample supply of light, and adds to the area of the room. It adjoins and opens into the principal hall, corridor, kitchen, and large pantry. The Kitchen is conveniently situated, and adjoins the dining-room, corridor, pantry, store-room, cellar, and private stairway. It is provided with a range, sink, wash-tubs, and pipes for cold and hot water. By this arrangement the principal work of the family can be done with such thoroughness and facility, as to make such employment interesting and pleasant, devoid of any sense of drudgery. The Corridor is adapted to all the uses of a rear hall, and communicates with each of the other principal rooms of the first story. It is also an auxiliary apartment, and may be used in connection with either of the other apartments, and affords valuable room for many in-door occupations for both old and young....**Second Story,** (fig. 4).—The engraving is sufficiently plain to require but little explanation. It will be seen that there are 7 rooms, besides halls and closets. The Bath-room is situated in this story over the kitchen, and contains the bath-tub, seat-closet, and water-tank, and is accessible from the principal building, through the passage leading from the principal hall. [An opening through the ceiling of the kitchen, with a register, would probably let warm air enough up into the bath-room, to keep frost out in winter, especially if some fire remained in the range or stove most of the night. In all arrangements of water tanks and pipes, care must be taken to keep them from being frozen in the coldest nights. ED.] ....The **Attic** is completely floored over, but is otherwise unfinished. Several bed-rooms might be finished in this story if desirable. An open attic is always valuable for storage, drying clothes in stormy weather, etc. [Yes, and as play-room for children in rainy weather; they will call it *garret*.—ED.]....**Construction.**—Any one at all familiar with building, would see at a glance that the form, and arrangements of this plan, admit of its execution in section. There are conditions that would justify the building of the central part of this house, to be used as the residence of a small family, and add the wings at any future time, as circumstances might indicate....The excavations for the cellar are made 3½ feet deep. The foundations are 18 inches thick, and 6½ feet high, of broken stone, laid in mortar, with the joints neatly pointed on all surfaces exposed to sight. The earth thrown out of the cellar should be left on the ground, and graded around the foundation, leaving but two feet to show above the final grade. The chimneys should be started with the principal foundation, and the materials interlaced to insure solidity. Three fire-places are constructed in the first story, those in the kitchen and dining-room are in one stack built "square up" to the ceiling of the first story. Two separate flues are then continued through the second story, on either side of the passage-way, and are afterwards joined over an arch, and pass through the roof in one solid shaft. The estimate indicates the general character of the work. In these rural dwellings, the siding may be worked without the central groove shown in the engraving in the March *American Agriculturist*, page 89. This, though less pleasing to many, would give an expression of less artifice, and more strength.

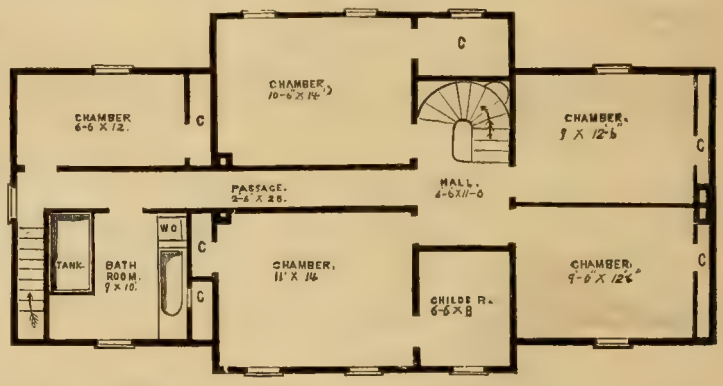


Fig. 4.—PLAN OF SECOND FLOOR.

....**Estimate.**—The following estimate will be found correct as to quantity, and ample as to cost. Most farmers have materials and facilities that would enable them to greatly reduce the cost of building by this plan. The items of excavation, foundation, carting, and painting, amount to nearly $500. Some, or each of these parts, might be satisfactorily done by those engaged on the place:

210 yards Excavation, @ 25c. per yard	$52.50
1750 feet Stone Foundation, @ 15c. per foot	262.50
4,000 brick Furnished and laid, @ $15 ₩ 1000	60.00
50 feet Stone Steps and Coping, @ 30 c. per foot	15.00
850 yards Lath and Plastering, @ 35c. per yard	297.50
4722 feet Timber, @ 2¼c. per foot	106.25
viz. 2 Sills, 4x8 in. x26 ft. long.	4 Posts, 4x7 in. x22 ft. long.
2 Sills, 4x8 in. x 22 ft. long.	8 Posts, 4x6 in. x 13 ft. long.
4 Sills, 4x8 in. x15 ft. long.	2 Plates, 4x6 in. x 26 ft. l'g.
2 Sills, 4x8 in. x 20 ft. l'g.	4 Plates, 4x6 in. x 15 ft. l'g.
5 Ties, 4x6 in. x 26 ft. long.	1 Girt, 4x10 in. x 26 ft. long.
5 Ties, 4x6 in. x 22 ft. long.	4 Valleys, 7x8 in. x14 ft. l'g.
4 Ties, 4x6 in., 15 ft. long.	42 Beams, 3x8 in. x22 ft. l'g.
2 Ties, 4x6 in. x 20 ft. long.	36 Beams, 3x8 in. x15 ft. l'g.
100 Joist, 3x4 inches x 13 feet long, @ 22c. each	$22.00
320 Wall Strips, @ 16c. each	51.20
150 lbs. Tarred Paper, @ 5c. ₩ lb	7.50
325 Novelty Siding Boards, @ 28c. each	91.00
Materials in Cornices and Outside Casings	50.00
375 Spruce Shingling Lath, @ 6c. each	22.50
65 bunches Shingles, @ $2 ₩ bunch	130.00
200 feet Gutters and Leaders, 10c. per foot	20.00
Piazza and Stoops, (complete)	120.00
344 Mill-worked Flooring Boards, @ 35c. each	118.40
4 Flights of Stairs, (complete)	90.00
1 Bay Window, (complete)	50.00
22 plain Windows, (complete) @ $12 each	264.00
4 Dormer Windows, (complete), @ $20 each	80.00
11 Cellar Windows, (complete), @ $6 each	66.00
35 Doors, (complete), @ $10 each	350.00
2 Mantels, (complete), @ $20 each	40.00
Closets, Shelving, etc, (complete)	20.00
Range and Plumbing, (complete)	200.65
Painting, $150; Nails, $20; Cartage, $30	200.00
Carpenter's Labor, not included above	218.00
Total cost, complete	$3,000.00

Some Wild Ducks.

Last year we gave a series of illustrations of the rarer ducks of the northern states; we now give engravings of some others, all of which, except one, are quite common. Duck shooting is not only good sport, but it is one which is in season at a time when it may be followed without neglecting farm-work, and in many parts of the country it adds essentially to the variety of the farmer's table, and it often enables a farmer's boy to possess a little much needed ready money. Of course this is not the view the sportsman would take of duck or any other kind of shooting, as he holds pot-hunting in great contempt; the interests of sportsmen are cared for by their own journals, but in an agricultural paper, it is proper to look at the matter in a practical light, and while we insist that every law for the preservation of game should be strictly observed, we think that the farmer and his sons need not be ashamed to make their sport profitable. The term duck is applied to birds belonging to several different genera, distinguished by the shape and size of the bill, comparative length of tail and wings, and other characters, which are given in the works on ornithology. Those who shoot ducks, or any other birds, would find their interest in the sport greatly increased if they compared their game with the descriptions given in some such work as Baird's or Coues', and thus learn something of ornithology. The bird known in Texas and Louisiana as the Long-legged Duck, is not classed as a true duck, but is more properly a wood-goose; its scientific name is *Dendocygna*, the tree-swan; it is distinguished from the true geese by the great length of bill, and from the ducks by the much longer tarsus, or lower part of the leg....The Bufflehead (said to be a corruption of buffalo-head) is also known as Butter-ball, Spirit Duck, and Dipper, which latter name is also applied to other birds; in Louisiana it is known by the French name, Marionette; its systematic name is *Bucephala albeola*. It is widely distributed, being found all over the Union and on both coasts; it breeds in the northern parts of the continent, and is abundant in the middle states in spring and autumn. It is a small duck, being only 15 inches or less in length. The body of the bird is white and black, the lower part of the neck being clear white, is in marked contrast with the upper part and head, which are very dark colored with beautiful iridescence of green and violet purple; upon each side of the head behind the eye, is a broad white patch, the two meeting on the nape; the head is particularly puffy, especially in the male; the female is a less conspicuous bird, with only a trace of the white patch behind the eye. The bird is an expert diver, dodging at the flash of the gun. It is found in the markets of cities in winter, at which season it is very fat, and though the flesh is quite fishy, it is esteemed by many.... The Long-tailed Duck belongs to still another genus, and is *Harelda glacialis*; it too is found along both coasts of the continent, and also in northern Europe, and like other widely distributed birds, has several common names, among which are Old-wife, Old-squaw, and South-southerly. Its distinctive character is its tail, which consists of 14 long and narrow feathers; in the male in summer, the central ones are much elongated and equal the wing in length; the summer dress of the bird is very different from its winter plumage; in summer the head, neck, and breast, are blackish-brown, the back, rump, and middle tail feathers black, sides of the head and body pale-bluish-gray, under parts and outer tail feathers white; in winter the head and neck become white, the cheeks remain gray with a broad patch of black on the sides of the neck. The bird appears in large flocks in autumn, and is a difficult one to procure, as when wounded it dives and clings to the bottom and dies there. It is abundant in the markets, but as the old birds are tough and fishy, they sell at low prices; the young bird if fat is good eating....The remaining engraving is that of the renowned Canvas-Back, *Fuligula valisneria*, which has a long, slender, and tapering bill; sides of the head and neck chestnut, and the top of the head and around the base of the bill dusky-brown; the back is black with much white intermingled in dots and lines, the under parts white. This duck is found all over North America, but is only especially prized when it feeds in particular localities, and is a remarkable example of the influence of certain food in imparting quality and flavor; while the Canvas-Back of the Chesapeake and a few other localities is regarded as the finest of all ducks, and is held in high esteem by epicures at home and abroad, it is, when shot elsewhere, no better than some of the common sea ducks; the superiority of birds from these localities is due to their feed, which is a plant popularly known as "wild celery," but which is not at all like or related to the garden celery. It is an aquatic which grows entirely submerged; its narrow ribbon-like leaves one to two feet long, have caused it to be called Tape-grass, and it is often called Eel-grass, though it is not a grass, and it is quite unlike the Eel-grass of salt water; its botanical name is *Valisneria spiralis*, and the fact that it is a favorite food of the Canvas-Back, is recognized in the specific name of the bird. Wherever this plant abounds, there these ducks acquire the peculiar flavor for which they are noted; the plant is abundant at various places on the Hudson above the influence of salt water; but the birds have well nigh abandoned these feeding grounds. Chesapeake Bay and its tributaries, and to some extent Delaware Bay, are the great local-

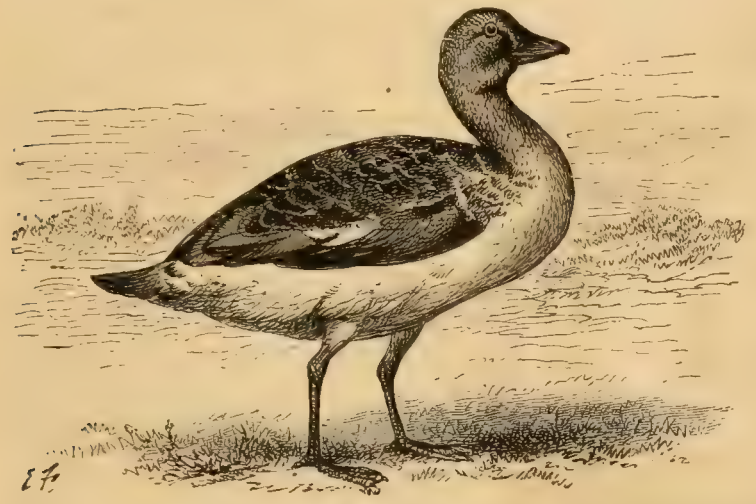


Fig. 1.—THE LONG-LEGGED DUCK.

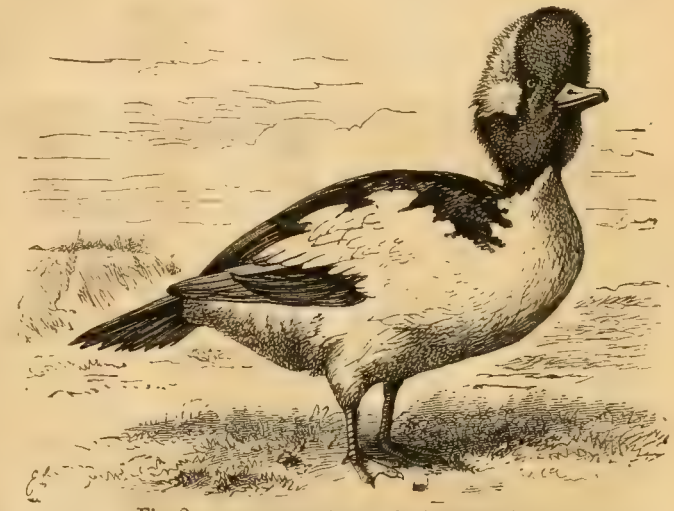


Fig. 2.—THE BUFFLE-HEAD, OR BUTTER-BALL.

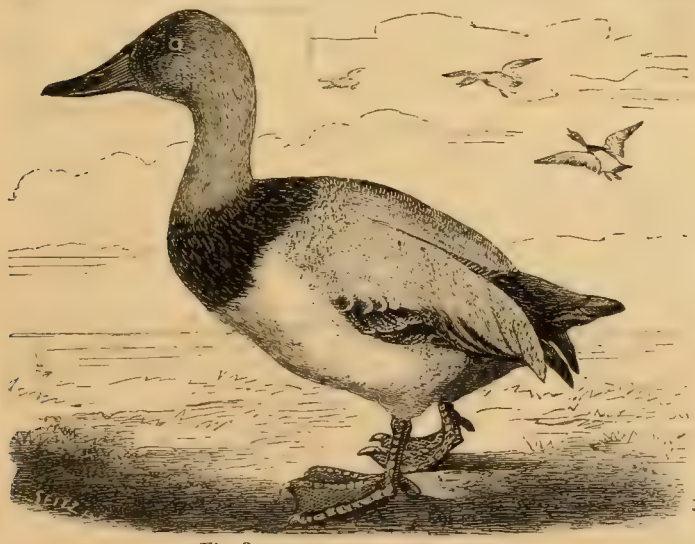


Fig. 3.—THE CANVAS-BACK DUCK.

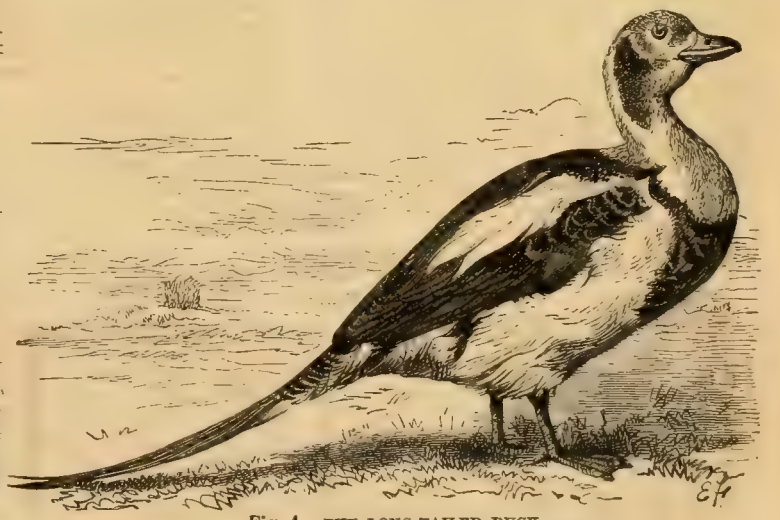


Fig. 4.—THE LONG-TAILED DUCK.

itles for these ducks; they arrive at the feeding grounds in November, or earlier, and are allowed to remain undisturbed long enough for the influence of the food to be manifested. They are powerful divers, and obtain their food from the bottom, the roots and buds at the base of the plant, being the portions they eat; they may often be seen covering acres of their feeding grounds, and from their great abundance one would suppose that they could be captured very readily, while in reality it requires much skill and stratagem to get a shot at them. There are several methods of hunting from boats and from the shore. Boats and floats disguised in various ways are used, and batteries and screens are built upon the shore behind which the hunters conceal themselves; favorable localities for hunting are rented at high rates. The various methods of shooting were very abundantly illustrated in the *American Agriculturist* for Oct., 1868. In some cases those who make hunting a business, employ as many as 20 men, and send to market 15 to 20 barrels of ducks, including a large share of Canvas-Backs, weekly; formerly enormous swivel-guns were used by which hundreds of birds were killed at a single discharge, but this destructive slaughter is now prevented by law. Pairs of Canvas-Backs sometimes weigh as much as 12 lbs., but this is unusually large; they sell in the New York market at $2 to $4 a pair, according to the season and supply, but are rarely less than the lower price; considerable numbers are shipped by steamer to England, where they find a ready sale at high prices. Several other ducks feed upon the *Valisneria;* the Red-head, which belongs to the same genus, has a broader and shorter bill, and a pure chestnut-colored head; when from the same feeding grounds, it is regarded as nearly equal to the Canvas-Back, and sells at a high price. The Bald-pate or American Widgeon, which has the top of its head white, feeds with the Canvas-Back, but not being so good a diver, it manages to steal the *Valisneria* from that bird, as it brings it up from the bottom, and by the residents in the localities where both birds abound, its flesh is preferred to that of the Canvas-Back.

Walks and Talks on the Farm.—No. 143.

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Farming prospects have a far more cheerful look to me now than they had in the spring. Crops and prices turned out better than I expected. It is true, my wheat stubbles have a sorry look. It is bad enough to lose a crop, but the loss of the crop and the money one expected to get for it does not end the matter. A poor crop of wheat results in a luxuriant growth of weeds, and foul land for years to come. My barley turned out better than I anticipated, and brought a good price. And the clover has taken better than on the wheat.

The corn fodder is a grand crop, and the land is as clean as a garden. Potatoes were never so good, and corn is far better than the average. My sheep never did so well, and combing wool is affected by the dull times far less than fine and medium wool; and such will be the case for years to come. My pigs, too, are doing well, and the present and prospective high price of pork gives these animals an additional interest. They pay me much better than any other stock. And such, I think, would be the case, even if I sold none for breeders and disposed of the whole of them for pork. But of course we have to take the value of the manure into consideration. If it was not for the manure, we should not be able to compete with the west in the production of pork.

My Northern Spy apple orchard is giving a good account of itself. Many of the trees are so loaded that the branches nearly touch the ground, and we have had to prop them. The Northern Spy is an upright-growing tree and makes a close head, and I have been taking great pains to thin out the center and to encourage a more spreading growth. Now that the trees are coming into full bearing, I find that this was not so essential as I supposed. The branches are long and slender, and bend like willows under their heavy load of large fruit. The idea of "letting in the sun" by pruning out the center is not well founded. The main thing is to make the land rich. How this can best be done depends on circumstances. As I have frequently said, my main orchard is in grass, but I have a few trees that are in a dwarf pear orchard, where the land is cultivated and nothing grown under the trees. Then, in my garden, I have a row of some six or eight Northern Spy trees, where the land is cultivated and vegetables and fruits grown. In other words, I have (1st) an orchard kept in grass; (2nd) a few trees growing in cultivated land kept fallow, and (3rd) a few trees in the garden, where the land is cultivated and planted with vegetables. All the trees were set out at the same time, about 18 years ago. The trees in the garden produce *nothing* of any value. They bear very little fruit, and what they do bear is knotty, ill-shaped, specked and wormy. I do not attribute the whole of this effect to the present mode of treatment, but in part, at least, to the fact that for eight or nine years after the trees were set out the land was in grass and weeds. The trees were set out on the west side of the garden, near the fence, and this strip of land, for a rod or so wide, was entirely abandoned to weeds and grass. It was a convenient place for all the stones, sticks and rubbish of the garden. As might be expected, the trees made a poor growth, and they have not yet recovered from this early neglect. I propose now to keep the land fallow and manure it, and see if better treatment will produce better results.

The trees in the pear orchard are not manured. They are kept in bare fallow, the land being plowed and cultivated several times every year, to keep down the weeds. Between these trees and the trees in the main orchard there is merely a rail-fence. It is, in fact, all one orchard. The only difference is that part is in bare fallow without manure, and the other is in grass, top-dressed with manure and pastured with sheep. I cannot, at present, decide positively which is the better, so far as the trees and fruit are concerned. I *think* there are some indications in favor of the manure and grass treatment. It seems to me the fruit is a little higher colored in the grass orchard. And I have an idea that the grass and manure treatment will in the end prove to be the best. Two years ago this orchard produced about 100 barrels of choice fruit per acre, and apples being a poor crop generally, I got $3.25 per barrel. Last year I had a fair crop, but the general crop being large, I got little for the fruit. This year apples are generally a failure, and I suppose choice fruit will command high prices.

I can sincerely say that I am very far from considering myself a good farmer. But I have great faith in good farming. And I feel sure that there is no country in the world where good farming, as compared with poor farming, is more profitable than in the United States. Our general agriculture is not of a high standard. There is very little *culture* about it. We plow and sow—and reap what nature gives us. Sometimes the seasons are favorable and we have good crops. But such crops rarely prove of much benefit to the farmer. They are good for the railroads and all interested in the carrying trade. I do not see any remedy for this state of things, except in better farming.

Better farming would not necessarily give us more wheat and corn for exportation, taking one year with another. But it would give us a steadier supply. We should not have corn at 25 cents a bushel in a favorable season, and 75 cents in an unfavorable one, for the simple reason that better farming requires us to consume more of our corn at home on the farm. Better farming would enable us to keep the millions of dollars which we now send out of the country for wool, barley, and garden and vegetable seeds. We could export more pork, bacon, hams, and lard. And it looks now as though we should be able to export live cattle and sheep to Great Britain. At any rate we could eat less pork and more beef and mutton at home. Our bacon and pork, as it improves in quality, will be in great demand at higher prices. It is clear to my mind that if we raised better crops and fed out more of our produce on the farm, it would be a great national blessing. But it is not necessary to discuss this point. We have to look at things as they are. What you and I want to know is how to make more money by farming. It is hardly worth while asking what would be the effect if everybody farmed in the best manner. As individual farmers we are competing with each other, and selling in a common market. Our aim must be to lessen the cost of production and to raise such articles as will command the best prices.

We can lower the cost of production by raising larger crops per acre, or by keeping such animals as give more milk and grow more rapidly in proportion to the food consumed. Prices depend on supply and demand. In feeding animals we can make close estimates as to the cost of our products, but in raising crops, the influence of the season, of mildew and frost, of rain and drouth and insects, must never be forgotten. Nothing we can do will ever make us independent of the weather. But it is certainly true, as a rule, that the good farmer suffers less from adverse seasons, insects, etc., than the farmer whose land is undrained, poor and weedy. During Mr. Lawes' twenty years' experiments on barley, the least yield on the plot without manure was 15 bushels per acre. The same year the adjoining plot, dressed with barnyard manure, produced 48 bushels per acre. The largest yield of the unmanured plot during the twenty years was 44 bushels per acre, while the plot adjoining, with barnyard manure, produced 65 bushels. In the favorable season we have on this continuously unmanured plot 44 bushels per acre, and in the unfavorable season 15 bushels, the average of the 20 crops on the unmanured plot being 25 bushels per acre. In the unfavorable season we have 15 bushels without manure and over 48 bushels with manure. In the favorable season we have 44 bushels without manure, and 65 bushels with manure.

Now, in talking to a man like the Deacon, we are pretty sure to hear of some great crop that was raised with little labor and less manure. If such a man had raised such a crop as the above, he would say, "I had a piece of land that had had no manure for some years, that I sowed to barley, and got 44 bushels per acre and 2,520 lbs. of straw."—He would forget to tell that the very same field, with precisely the same treatment, only yielded 15 bushels on another occasion. He would keep on year after year hoping to get 44 bushels again, overlooking the fact that when he had a large crop others had a large crop also, and the price was very low. Such an unusually favorable season in this country with our large area would send barley down to 50 cents a bushel, while an unfavorable season would be likely to send it up to $1.50 to $2.00. Assuming such to be the case, let us look how the matter would stand:

NO MANURE.

Bad Season.—15 bushels	@ $1.50	$22 50.
Good Season.—44 "	@ 50c	22 00.

MANURED.

Bad Season.—48 bushels	@ $1.50	$72 00.
Good Season.—65 "	@ 50c	32 50.

Bad seasons, like bad things generally, are more plentiful than the good. What we call good seasons are the exception; bad seasons are the rule. After deducting the seed, the interest on the land, and the expense of plowing, harrowing, rolling, drilling, and reaping, it will make a vast difference in the *profits*, whether we get in a bad season 15 bushels or 48 bushels per acre.

In this country there is even a greater difference between good and poor farming in a bad season than the figures taken from Mr. Lawes would indicate, for this reason: His unmanured land is as clean as he can make it, while in a poor season, our poorly farmed land would be pretty certain to be infested with weeds, and these would reduce our yield to such an extent that the crop might be hardly worth harvesting

Looking at the matter in this light, I hope to be excused for again and again urging the importance of better farming. I have not much patience with those who say it will not pay. If you farm at all

it will certainly pay to farm well. It is slow work improving a farm, but stick to it, and every year the work becomes easier and the progress more rapid.

We must make more manure. Manure is the farmer's capital. Capital is accumulated earnings. If I work for $1,000 a year and spend $1,000, I am no better off at the end of the year than at the beginning. But if I can, by working a little harder, earn $1,200 a year, and by practicing a little economy, live on $800, I can lay up $400. This four hundred dollars is *capital*, and begins at once to earn money for itself. Capital is accumulated earnings. It is what is left of our profits or wages after deducting the expenses of living. Manure is accumulated plant-food. It is what is left after raising and disposing of a crop. If your land, as now worked, is capable of paying you 20 bushels of corn and a ton of stalks per acre every year, and you sell the whole, your land is no richer in available plant-food. You are making no manure. You spend *all* your wages. But if by extra cultivation, by setting free more plant-food from the soil, you can make your land pay you 40 bushels of corn and two tons of stalks, and instead of selling it you feed it out to your cows or sheep and pigs, and are careful to save all the manure, then your 40 bushels of corn and two tons of stalks, less about 10 per cent removed by the animals, becomes *capital*, and begins at once to earn money for itself.

It is worth while making a great effort to get a little capital, in the form of manure, and not always to be dependent on the yearly wages which the soil alone can pay us. How this can best be done, depends on circumstances. I think it will sometimes pay to gather leaves for bedding. I am *sure* it will pay to scrape up the barn-yards and not let the droppings of our animals lie exposed over a large surface, for the rains to leach out all the soluble matter. On my own farm I gather all the potato tops, and use them for bedding the store hogs. If not required for this purpose, I should put them in a heap and mix them with manure.

Several farmers have written me, asking how I manage to keep my manure heap fermenting all winter. They have tried the plan, but the manure freezes as soon as it is wheeled on to the heap. This is probably because the heap is not started early

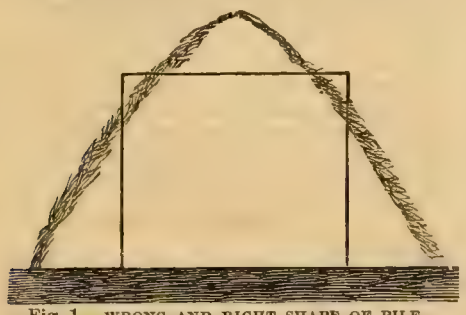


Fig. 1.—WRONG AND RIGHT SHAPE OF PILE.

enough, and is not kept sufficiently compact. If you have ever made a hot-bed, you will know how to start the heap. Get all the horse, sheep, cow and pig manure you can scrape together, and place it in some spot to which it will be convenient to wheel all your manure as it is made during the winter. If you set a man to do this work, he will be sure to scatter the manure too much and draw it in like the roof of a stack, as shown in the diagram, figure 1. If so, the top of the heap should be leveled down, and the bottom narrowed in by throwing the manure on top until the heap is oblong or square, as shown in the figure. The object of this is to keep the top from freezing. If left narrow at top, the wind will blow through and you will have a foot or two of frozen manure. This square shape must be kept during the winter. You will have to attend to this matter yourself, or it will not be done. And it will require constant attention during the winter, or your heap will soon be scattered, and the frost will get in. I place a plank on the heap, and as the stables and pig-pens are cleaned out, wheel the manure on top and *spread it*. Do not forget this latter point. And if your man neglects it, do not get too angry. After years of experience I have not found a man who did not need to be told again and again not to leave the barrowful unspread and exposed to the frost.

When it becomes necessary to enlarge the heap, the better plan is to take the manure from the old heap down to *a* (fig. 2), and commence a new heap with it (*b*, *c*) at the end of the old heap. It would be well to get the manure from the center of the old heap, where it is fermenting, and then fill up from the sides, and make the top level and square. Do this yourself and it will be well done. The new part of the heap, if started with barn manure, will keep on fermenting, and you can add to it from day to day the fresh manure from the stables, pig-pens and yards. The whole heap will keep on fermenting slowly, and you can add *anything* to it that will make manure. The richer you make it, the better it will ferment. If you have any broken bones, or bone-dust, or blood, hair, skin, or any refuse animal matters, mix them with the manure in the heap. They will add greatly to the value of the manure and favor fermentation.

The heap can be extended on all sides in the way

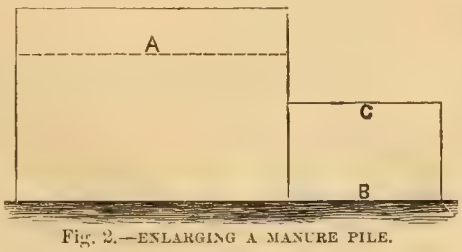


Fig. 2.—ENLARGING A MANURE PILE.

recommended above. The larger it is, the less danger there is of the frost getting in and arresting the fermentation. Great pains should be taken to save all the liquid from the animals. It is the most valuable part of the manure. If this is done, the heap will be moist, and there will be no danger of fire-fang. In a heap so managed, there is little or no danger of any ammonia escaping. The manure will be in prime order for use in the spring, and will have a far greater effect on the crop than if it was not fermented.

Last winter we cut all our corn-stalks, hay and straw with a feed-cutter. It saves much fodder. It is more convenient, for me, in feeding. I do not try to compel the cows and sheep to eat up all the straw or stalks clean. Let them pick out the best of it and use what is left for bedding. The ease with which the manure can be handled in the spring, will compensate for the labor of cutting the stalks into chaff. The butts of the stalks, when cut into short lengths of an inch or so, will absorb much liquid, and with a little straw make good bedding. I cut mine usually with a two-horse tread-power, but am inclined to think, when there are men who go round cutting with an eight or ten horse power machine, that this is the better plan. The job of cutting is soon done, and it leaves the farmer more time to attend to his stock.

A farmer should always keep in mind the fact, that his own time is worth far more than that of any men he can hire to work for him. He must be very careful that his men do not waste their time or strength; but he should be still more economical of his own mental and physical energy. I find no difficulty in getting men who can chop wood by the cord, or pile manure, or thrash, or turn a fanning mill, or pump water, or throw sheaves to a thrashing machine, or cut bands, or drive teams; but how rare it is to find a man who can take care of the team, or feed sheep, or bed them properly, or milk cows and feed and water them regularly and judiciously. I have never yet found a man who could feed pigs properly—never one who could cook the food and feed it without waste. If you do not keep a constant watch, the food will sometimes go into the troughs scalding hot, or you will wake up some morning to find the warm food intended for the pigs' breakfast frozen solid. If you are very fond of chopping, you may go to the woods an hour or two occasionally, by way of recreation, but you will find your *work* in the barns, stables, and yards, or in the house, doing that which you cannot hire others to do for you. I do not think I ever saw my successful German neighbor, to whom I have several times alluded, plowing himself. But when the boys are plowing, he is usually not far off, fixing up the fence around the lot, getting out a stone, or hanging a gate, and putting everything in order. He is always busy doing something, but it is something that will allow him to direct all the operations of the farm while he is doing it.

Wind Power—Wind Engines.

The cheapest motive power in existence is the force of the wind. It can be utilized without preparation; no reservoirs, dams, or flumes are needed to apply it to our machinery, and the proper engine alone is to be provided. In some countries wind-power is extensively used. The traveler in Europe scarcely loses sight of a wind-mill in his journeys, and in places the landscape is thickly dotted with them. Substantial grist-mills, which have faced the breezes for centuries, still wave their arms and promise to do so for centuries more. Much pumping and drawing is done by these mills, and thousands of acres are either watered by irrigation or dried by drainage, and rendered valuable and productive by their help. A few years ago a wind-mill was an unusual sight in this country, except in the very oldest portions. We were not a sufficiently settled people, and did not remain long enough in one place to make it profitable to build such substantial mills as have been so long in use in other countries; we needed cheaper and more quickly constructed mills. Those which we could then procure, were not satisfactory, they were slightly built, and were not able to take care of themselves when the breeze became a gale or a hurricane. Recently our mechanics have turned their attention to wind-engines, and great improvements have been made in their construction. We have now a choice of several kinds of them, all of them useful, but differing chiefly in their degree of adaptation to varying circumstances. At the recent Illinois State Fair there were no less than thirteen different wind-engines on exhibition, from the small one, eight feet in diameter, costing but $100, of half a horse-power, and fitted for pumping stock-water or churning, up to those of 30 or 40 horse-power, costing $3,000, and able to run a grist mill or a woolen factory. Between these extremes there are a number of mills capable of adaptation to almost every purpose for which power is needed on the farm or in the workshop. A mill 22 feet in diameter, costing about $500, has a power of five horses; a two-horse-power mill is about 16 feet in diameter, and costs about $325. This cost is less than that of a steam engine, and a wind-engine needs neither fuel nor skilled attendance. Neither is there danger of fire or explosion from accident or carelessness. The wind engines are now made self-regulating, and in a sudden storm close themselves. They are also made to change their position as the wind changes, facing the wind at all times. With these engines one may saw wood or lumber, thrash, pump, hoist hay or straw with the hay fork, shell corn, grind or cut feed, plane lumber, make sash or doors, or run any machinery whatever. There is but one drawback, when the wind stops the mill stops. For work that may be done when it is convenient to do it, as most of the mechanical work on a farm is done, these engines are exactly what is wanted. On the western prairies, and almost everywhere, except in sheltered vallies in the east, we have wind enough and to spare, which offers to us a power that is practically incalculable and illimitable, and the means of utilizing this power is cheaply given to us in the numerous excellent wind-engines now manufactured. In fact so cheaply can these mills be procured, that it will not pay for any person to spend his time in making one, although he may be a sufficiently good mechanic to do it. Where there are several nearly perfect machines, we can not undertake to say which is the best. Those intending to purchase, should send for descriptive circulars to the parties who advertise.

See to Cleaning the Drains.

A very important labor of the farm at this season is to clear out the open drains. Upon low meadows these will now be filled and choked with a mass of weeds and sediment. Unless these are

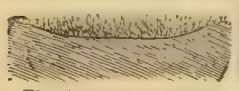


Fig. 1.—FOUL DITCH.

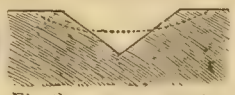


Fig. 2.—CLEAR DITCH.

opened at once, it will be too late for the present season, and the meadow will be greatly injured for the next year. Generally the condition of the ditches at this season is as seen in figure 1. This shows their appearance in a low meadow on the writer's farm after one season's growth, although the weeds were cut several times. To clean them

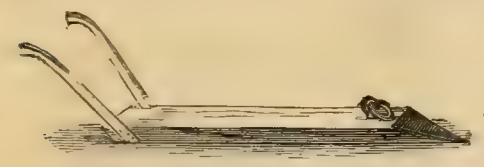


Fig. 3.—LOG TO SMOOTH DITCHES.

a plow was run so as to throw out a furrow on each side. A log of wood hewed to the shape shown at fig. 3, to which a pair of old plow handles were bolted, was then drawn in the furrow. This smoothed the bottom and sides and so plastered them that the earth did not fall in again. The ditches were then the shape of that shown at fig. 2, and remained so in the spring when they needed no more attention. Where deeper drains have to be cleared or made, a different treatment is needed. We have used a scoop made of strong sheet iron, such as is shown in fig. 4. This was riveted to a

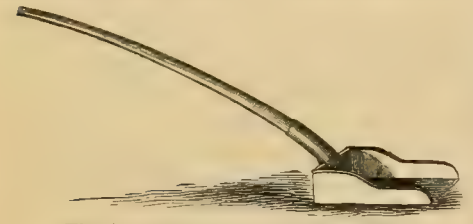


Fig. 4.—SCOOP FOR DIGGING DRAINS.

long curved handle by which a man could reach the bottom of a drain without stooping too much. If the meadow is very wet and mucky, a board should be laid at the side of the ditch upon which the workman can stand, (see fig. 5). This will keep the feet dry and prevent poaching the surface and breaking down the edges of the ditch. Swamp shoes may be used in making new ditches where the soil is very wet and soft. These shown at fig. 6 are made of a piece of light wood, ash being probably the best, strengthened with two cross

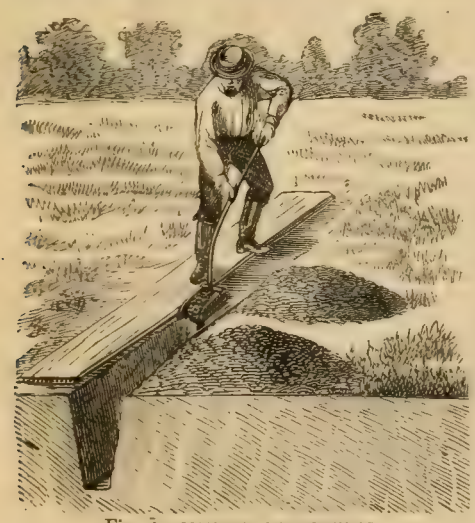


Fig. 5.—MANNER OF WORKING.

cleats. A leather strap is fastened to go across the toe, and a string is passed around the instep. By taking a little care at first any one can walk over a soft muddy surface with ease and safety if he will only step wide enough apart to avoid putting one shoe upon another. The sods and muck thrown out of these ditches should be left in heaps to drain, and when dry carted to the barnyard where they will make excellent material for compost heaps, and bedding for pig-pens or stables. No person owning a cranberry plantation should fail to clean out the ditches as soon as the crop is gathered. If there is water in them, the scoop here shown will take up both muck and water together, and the muck will drain on the bank. The muck taken out of the ditches should be mixed with lime and left until spring, when it will make an excellent top-dressing for the vines.

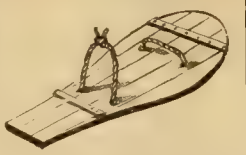


Fig. 6.—SWAMP SHOE.

How to Mend a Chain.

What is called a loose link is one of those little things which cost but little, and which may often save a hundred times their cost in time in case of a break in a chain. No lumberman's outfit is complete without a stock of these links, and no farmer

Fig. 1.—CHAIN MENDED.

should undertake to haul stones, clear land, or draw logs without having a few of them, or at least one or two and a few rivets. They are made of iron-rod of the best quality, of the same size as the links of the chain. For a trace chain, nail-rod is the proper size, and quarter-inch or three-eighths-rod is best for ox chains. The link is made, but not closed, and the ends are beaten out and holes punched in them. The link is left open sufficiently to receive the ends of the broken chain, and is closed with a hammer upon a stone or a log of wood; a rivet is then inserted and clinched, and the chain is thus made fit for use again in two minutes. The open link is shown at fig. 2, and the link closed at fig. 1. Those who have a portable forge can make a stock of these links in a spare hour, which would cost several dollars if made at the village blacksmith's, without counting loss of time in going thither.

Fig. 2.—LINK.

THE QUANTITY OF WATER NEEDED FOR IRRIGATION.—A scientific paper recently stated that a flowing well furnishing 1,000 gallons of water per hour, would water a section of 640 acres of land. A well of this size, bored to 1,000 feet in depth, would cost $10,000. The deduction is therefore made that the irrigation of a farm of 640 acres on the plains would be a very profitable business, and might make a nucleus for a stock range of many thousand acres. This estimate is remarkably incorrect, and serves to very dangerously mislead people who are themselves too sanguine, and are inclined to think this business of irrigation by wells a very attractive one. The fact is that 1,000 gallons of water an hour will only irrigate two acres of land. A thousand gallons of water, running for 24 hours, spread over two acres of ground, will supply just about one quart per square foot, a quantity obviously not too much for its daily supply in an arid climate and in a porous, thirsty soil. The usual allowance by irrigators for an acre of land is one quart (about a *litre*) per second continuously flowing. If this is figured out, it will be found to approach very nearly a quart per square foot per day. To spend $10,000 to irrigate two acres of land, even were the water supply absolutely certain forever, (which a well is not), would be too costly, when that sum will buy a good farm within 10 miles of a good eastern market, and a large farm choicely located in the west. The fact is, irrigation by wells may pay on a valuable market garden, but never can on the ordinary crops of a farm under any circumstances.

To Prevent Cows Sucking Themselves.

A correspondent favors us with some plans for preventing the annoyance caused by self-sucking cows. This trick is a difficult one to cure. Some obstacle that can not be avoided, must be put in their way, and used permanently, or they will return to their bad habit. One plan is to bend two pieces of hickory timber, or to use two ox-bows fastened together by two iron rods on each side. Iron staples are fastened near the bottom of the

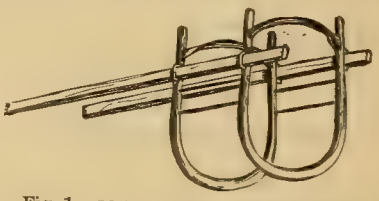


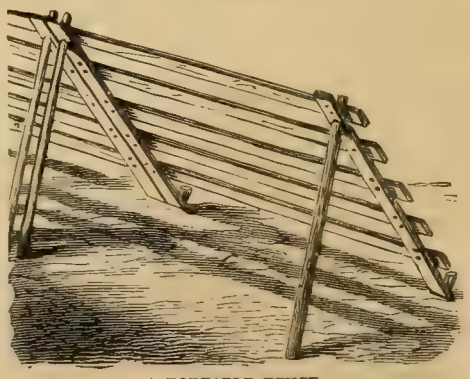
Fig. 1.—FRAME FOR SUCKING COWS.

bows, through which two bars are slipped and fastened. This is shown in figure 1. These bars project along the sides of the cow, and while they allow her to feed, they will not permit her to turn her head towards her flank, so as to suck herself. Another plan is to make a bag of coarse sack cloth, which fits around the udder, and fasten straps to it, as shown in figure 2. These straps are buckled or fastened by snap hooks across the loins and behind the buttocks. A double strap passes from the forward one on each side of the tail, and the strap which holds up the rear end of the bag, passes through loops at the ends of this double strap. There are only two buckles to fasten, and the bag is made to fit so tightly, that the cow can not get her nose under the edge of it. Either of these plans are effective if properly applied.

Fig. 2.—BAG FOR SELF-SUCKING COW.

A Portable Fence.

Of the many varieties of portable fences which have been in use, the greater part are objectionable on one or another account. Some require too much trouble to set up, some are too easily blown down, while others are only portable in name. At this



A PORTABLE FENCE.

season many farmers in the middle and southern states have green crops to be fed off by sheep, or for some reason wish to divide their pastures. The fence here illustrated will serve this purpose, for which we have recently seen it in use, as well as

many others for which a temporary fence is wanted. It is very simply constructed. A panel is made of fence boards, in the ordinary manner, with two or three cross upright pieces, as the panel may be short or long. At the top of the fence holes are bored with a two-inch auger, in a somewhat sloping direction, to receive the stakes shown in the engraving. These are sharpened at the end for about a foot, leaving a square shoulder to prevent them going too far through the holes. In placing the fence, the stakes (pointed at the lower ends) are driven into the ground in a sloping direction, the ends being placed through the holes in the fence panels. The fence leans backwards from the field, and is prevented from slipping or being pushed forwards, by stout stakes driven in the ground in front, or by pegs driven through holes in the bottom of the uprights. If made five boards high, this fence will be dog proof, as a dog can not jump over it in the leaning position in which it is set up.

Pits for Storing Roots.

When properly put away in pits, roots of all kinds keep better than when stored in cellars. The chief difficulties in the way of keeping roots in pits are the danger that frost will penetrate the covering, and the risk of heating for want of ventilation. By the use of the board coverings shown in the engravings, these difficulties may be with care wholly removed. The boards, (fig. 1), are made of a length to cover one side of the pit, and of such a width as to be handy and portable. Six feet square will be found a convenient size. The cheapest kind of boards will answer the purpose. These are cut into the required lengths and nailed to cross-pieces or cleats at least four or six inches wide, placed edgewise, as shown in the engraving. When the roots are heaped in the usual manner, and covered with straw placed up and down on the heaps, the boards are laid on the straw so that they nearly meet on the top. A space of two inches is left, through which the ends of the straw may project. The straw is turned down over the edges of the boards when the earth is thrown on them. The boards are placed upon the straw, with the cleats down, and so that they lie horizontally. There is then an air space of four to six inches besides the thickness of straw as a protection to the roots. Besides this there may be as thick a covering of earth thrown upon the boards as may be required. In many places no earth will be needed, but it will always be useful in keeping the roots at an even temperature, and so low that they will not sprout or heat. If a covering of earth is put on, the projecting straw should be turned down on the opposite side to that on which it is laid, and the ends covered with earth. The extreme top of the heap need not be covered at all unless severe cold is expected, when a few places may be left uncovered for ventilation. These boards will serve many other useful purposes about a farm. Two of them tacked together at the top will make an excellent covering and shelter for a hen-coop. In early spring when late frosts are expected, they will furnish good coverings for tender plants, and when not in use they may make a temporary floor in an outhouse. At figure 3 is shown a root-house for use in the open prairies, where shelter is scarce and the means of building are not abundant. An excavation is made in the ground six or seven feet deep, and as wide as may be suitable to the length of the poles with which it is to be covered. The length will be according to the necessities of the builder. It is covered with rough poles, over which some coarse hay is thrown. The sod, which should be cut from the surface in strips with the plow and an ax, is then laid closely on the top, and earth is heaped over the sod. A man hole at one corner, or if it is a long cellar, in the middle, is built up, with small poles and about two feet high. A ladder or row of steps is made from this to the bottom. The man hole when not used is filled with straw or hay, which is thrown upon a loose door or boards resting upon the logs, and a stone or log is laid upon the straw to keep it from being blown away. Openings may be made along the side opposite to the entrance through which the roots or potatoes may be shoveled or dumped, and these may be closed with sods and earth during the winter.

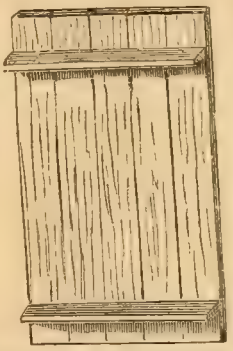


Fig. 1.—SHUTTER FOR PIT.

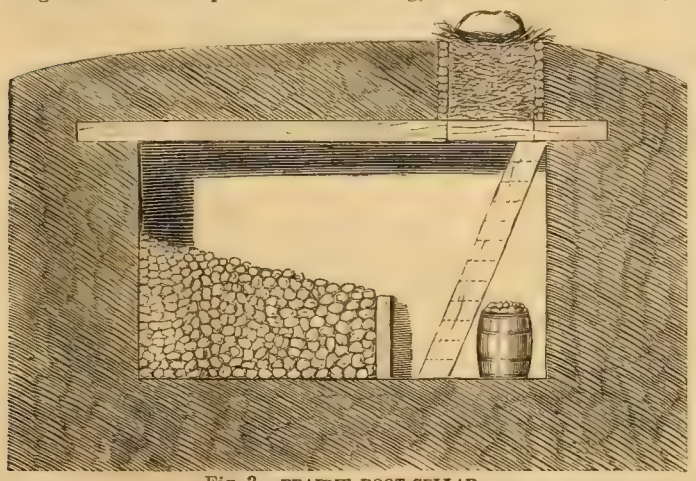


Fig. 3.—PRAIRIE ROOT-CELLAR.

Fig. 2.—SECTION OF FINISHED PIT.

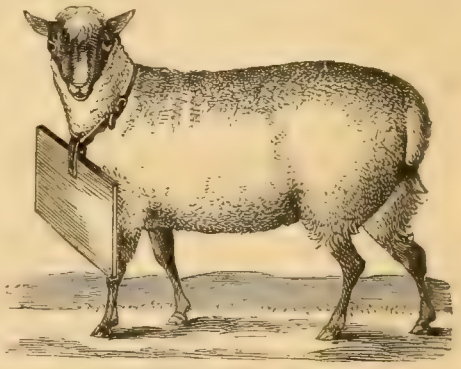
A Bladder for giving Injections.

To be able to give an injection to a horse at once may sometimes save the life of an animal. In some cases an injection is in every way preferable to physic. In colic an injection of soap and water, or of linseed oil, or, in case of worms, of salt and water, or of linseed oil and turpentine, may be much more effective than any other treatment. Almost any farmer may without expense procure such an injection apparatus as is shown in the engraving. It consists of a hog's bladder, which is large enough for any purpose, to which is fitted a piece of elderwood, from which the pith has been removed. This nozzle is shaved down and sand-papered until the surface is smooth, and the end is round and smooth without any sharp edge whatever. The liquid to be used is poured into the bladder with a funnel, and is forced into the bowels by gently squeezing the bladder. For small animals, such as sheep or pigs, a gutta percha tube would be useful, although with care a small piece of elder will answer. Before using the tube in any case, it should be well greased with pure lard.

INJECTION BLADDER.

To Prevent Sheep from Jumping.

When a sheep takes to jumping fences, the habit must be cured, for it can not be endured. One breachy sheep infects the flock, and ruins all the rest. Sometimes a valuable sheep that can not well be spared, acquires this habit, and some plan other than making mutton of it must be adopted. A plan we have seen followed with success is to hang a light board around the neck by a broad strap. The board should be of such a size, and so hung, that it will strike against the sheep's knees, when it tries to jump. If the sheep that leads the flock into mischief, and there is generally but one incorrigible leader, is thus treated, the trouble will be prevented. The shape of the board, and the manner of hanging it, are shown in the engraving.



BOARD FOR JUMPING SHEEP.

How to Cure a Split Hoof.

In reply to many correspondents, we give the following engravings, illustrating two methods in use for repairing split hoofs. At the best the cure of a split hoof is slow and troublesome, because every motion of the foot tends to open the crack, which can only be closed by a new growth from the coronet. At every opening the new growth is ruptured, and a new beginning has to be made. The only proper method of cure, is to prevent the hoof from expanding when the weight of the horse is thrown upon the foot. The preventions of this expansion may be secured in two ways: *First*, cut the edges of the crack clean with a sharp knife, up to the coronet, and remove carefully any dirt that may be in it. If there is any sound horn at the coronet, cut a groove in the crust of the hoof, in the shape of a A, from the sound horn downwards, below the crack. Then make on each side of the crack two or three cuts, as shown in figure 1. These should be deep enough to give a firm hold to the hooks which are to be inserted in the holes, but not so deep as to touch the sensitive parts

Fig. 2.

Fig. 1.—CRACKED HOOF.

Fig. 3.

beneath. A sharp, small gouge and a penknife are the best instruments with which to remove the horn. A hook make of horse-shoe nail rod, or a horse-shoe nail, is then made, as shown in figure 2, and pointed at each end. This is placed between the open jaws of a pair of pincers, and the ends are inserted in the cuts opposite to each other, on either side of the crack, as in figure 3. The hook is then forced together by closing the pincers, or in any other convenient manner, and the sides of the crack are held together. Or a pair of hooks may be made, each having an eye at one extremity, and when these are inserted and drawn together with a pair of pincers, a piece of strong wire, or soft Norway nail rod, may be passed through the eyes and clinched or riveted, as at figure 4. Or each hook may have a small winged flange on the end, in which a screw-thread is cut, and a small screw be made to fit it; when the hook is inserted, it may be drawn tightly together by the screw. This is shown at figure 5. In all these cases a heavy, wide shoe with heel and toe caulks should be used, to prevent spreading of the hoof. *Second*: Another method as at figure 6. In this the hoof is shod with a heavy caulked shoe, made wide at the heels. The crack is previously pared, as already described. To the heel of the shoe on each side, a strap of nail-rod iron is welded so as to fit around the hoof, as in the engraving. Each strap is turned up at the loose end, at least half-an-inch. The end is spread, and a hole is drilled or punched through it. A square headed bolt with a nut is then made to fit the hole. The ends of the straps may then be drawn together as tightly as necessary, by screwing up the nut. With this method the horse may be worked regularly without injury, and there is no strain upon the hoof, by which, if the crust is dry and brittle, it might be broken, as in the former method.

Fig. 4. HOOKS OR CLAMPS. Fig. 5.

Fig. 6.—SHOE WITH STRAP.

If there is no sound horn at the coronet, the cure is more difficult. These appliances must still be used, and after the hoof is secured as above described, the hair should be shaved from the coronet, and the part where the crust is cracked should be touched with a hot iron. This will stimulate the growth of new horn, which will then go on downwards until it reaches the sole. Without some such mechanical contrivance as these we have described, a cracked hoof may be regarded as incurable, but if these are properly applied, the cure is then only a work of time.

Sale of Short-horns in Great Britain.

A sale of fashionable Short-horns of the herd of the Earl of Dunmore, was held recently at Dunmore, near Stirling, Scotland. This sale is worthy of notice, as having surpassed the memorable New York Mills sale as regards prices, the highest price yet obtained for a bull having been paid for the two-year-old Duke of Connaught, which brought £4,725, or about $26,000 of our currency. There were 30 cows and heifers sold at an average of $2,881, and 9 bulls and bull calves averaged $4,975.

The average of the whole 39 head was over $3,700, while that of the New York Mills sale two years ago, was only $3,504. We remarked at the time of the last named sale, that it was very improbable that we had seen the highest prices paid for this class of stock, and even now, we think, it would be equally unsafe to conclude that the highest point has yet been reached. This business is in the hands of English noblemen and millionaires, and wealthy American gentlemen, and while the fashion lasts, no one is hurt by their indulgence in it even to a still greater extent than at present. The strife to possess the Dukes, Duchesses, Red Roses, and a few other families of cattle, of no more intrinsic value than hundreds of other Short-horns, serves to call attention to this breed, which stands unapproached by any other, as a means of improving our common stock, for the production of both milk cows and beeves. There are, however, scores of breeders of Short-horns, who are now engaged in the useful and laudable business of raising excellent stock for sale, at prices such as a farmer or stock grower can afford to pay, with profit, to one who devotes his attention to fashionable stock. The final and best test of all, is the butcher's scales, and it is not by that test that these high priced stock are judged at all. With "pedigree" hogs, sheep, dogs, and chickens, and "herd-books" and "records," wherein to enumerate their titles, and the exhorbitant and monstrous prices paid for some of the stock, this fancy has passed out of the domain of the farmer altogether, and seems to be approaching to a mania such as has existed heretofore, in connection with Dutch bulbs, old china, and "bonanzas" in silver mines. Those who look on may be amused, but are not hurt in any way. There is a limit to the real value of everything, and however highly we may rate the value of the Short-horn stock to the world at large, we begin to fear that this class of stock known as "fashionable," is made of no real utility by being confined to a clique of very wealthy and ambitious purchasers, who breed them for amusement, and sell them to each other. No "Duchess butter" nor "Duke beef" is likely to come into the market while this mania lasts.

The Use of Town Sewage.

Much has been said and written about the value of the liquid refuse of towns and cities as a fertilizer for farms so situated as to be able to receive the flow of the sewers conveniently. It does appear at first sight that a great waste occurs when the refuse of a million people flows into a river and to the sea uselessly, and sometimes offensively. But if it should cost two dollars to gain one by its use as a fertilizer, the economy is clearly in getting rid of it in the best way as quickly as possible. In England this "sewage" question has been exhaustively treated. Expensive works have been erected to pump the liquid into distributing tanks, from which it has been conducted over the fields rented or purchased, and cultivated specially for the purpose of using it upon crops fitted for irrigation. Nearly a million and a half of dollars have been thus expended. The cost of working the farms, (25 in number), in 1873, as stated in a "Parliamentary Return," amounted to $165,505. The receipts of the farms were $104,360. Only two farms made a profit; one cleared $60, and the other $6,550; the total loss was $67,755 in one year. It is doubtful if the farm which claimed a profit of $6,550, which is the Warwick farm, the great crops on which have been so much written about, really made any profit, and such a result is broadly hinted at by well informed people in England.

The experiment may, therefore, be considered as a failure, and the use of the sewage matter of inland towns even, in agricultural operations, as not remunerative. Far less profitable would it be in the cases of those seaboard cities where the cost of getting rid of the matter is the least, and that of using it upon the land would be the greatest. Sanitary enthusiasts must invent some other means of disposing of this refuse, now that the vaunted English system has failed to be practicable, for the serious question, what shall be done with the waste of our towns and cities, is as far from solution as ever. A motion was recently made in the English Parliament for returns showing the cost, and profit and loss, in the treatment of sewage by all the different methods now practiced in England, which will doubtless contain valuable information.

A Rock Cistern.

When there is soft rock, or very compact clay, a short distance beneath the surface, a very excellent cistern may be excavated, in such a manner as to need no arch or covering over it. A narrow well, to serve as a man-hole, is first sunk down to the rock, or a hole is dug large enough to work in. The rock is then dug out in the shape of a jug, enlarging the excavation as it is carried down. In the soft magnesian limestones, the sandstones, and

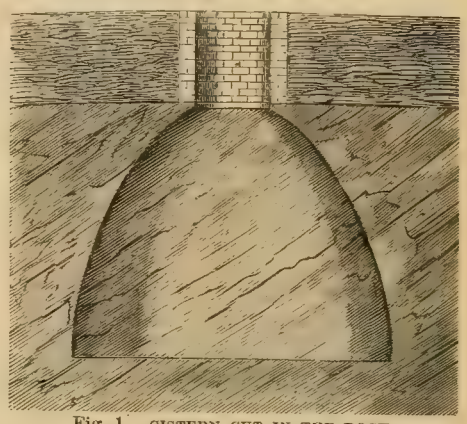


Fig. 1.—CISTERN CUT IN THE ROCK.

soft clay-slates, which are very frequent over wide districts in the west, this kind of cistern may be made with no tool but a light, sharp pick, or a hatchet and a shovel, and when once made, will last indefinitely. Figure 1 represents the shape of such a cistern. When the excavation is complete, the opening or man-hole is built up with brick to the surface, and filled around with earth. A covering for a pump or a well-curb may then be made over the opening.

A correspondent from Lansing, Mich., sends us a plan of a cistern with a filter, which he has constructed to supply his kitchen with rain water. The outside wall is built with bricks laid in cement, and also plastered on the surface with cement. Two inner walls are built of bricks laid upon their

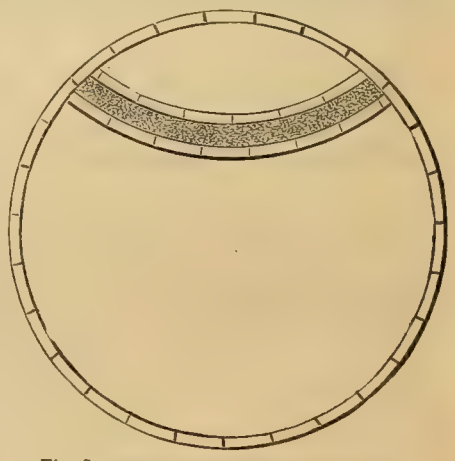


Fig. 2.—SECTION OF FILTERING CISTERN.

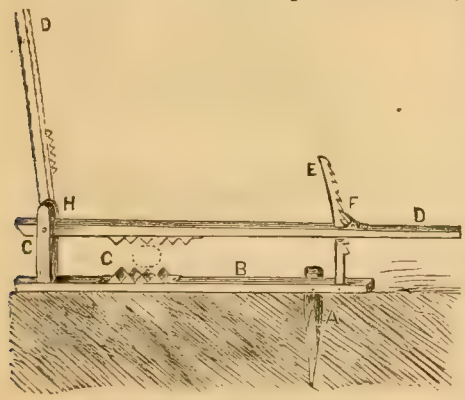
edges, without any cement between the ends. A space of four inches is left between these walls, which is filled with fine charcoal. The water filters through the narrow openings in the walls and the charcoal, into the small compartment, from which it is drawn sweet and pure. Figure 2 shows the ground plan of the cistern, with the inner walls and the layer of charcoal.

OLEO-MARGARINE CHEESE.—Those who take so deep an interest in the success of the "oleo-margarine" adulteration of dairy products, profess to be hurt when it is classed amongst the frauds which exist only by false representations. A curious illustration of the "honesty" of this business, is given in a recently published interview with a manufacturer of this so-called "patent cheese." In reply to a question, the manufacturer stated

that "the whole of his cheeses have been sent to England and sold to the factor as oleo-margarine cheese, with a full description of how they were made."—In reply to the question, what parties were selling the cheese in New York, he declined to give the names, but said "I know of at least four houses that have sold it, and one or two of them thought they had played a good trick upon some sharp buyers, by selling them oleo-margarine cheese at top prices for full cream cheese."—The company represented by the party interviewed, have five factories in operation making this cheese; besides these, there are several other factories. We repeat what we have before said, that there can be no objection to making an improved or patent cheese, if the makers will sell it openly for what it really is, but when the stuff is put off upon buyers "at top prices for full cream cheese," we do not hesitate to denounce it as a fraud, which is full of danger to the makers of the full cream cheese, as bringing their staple into disrepute. As yet we have not been able to find one box branded "Skim-milk and Oleo-margarine Cheese" on this market, although "four houses are said to be selling it."

A Rail Holder.

"C. H. K.," Lancaster Co., Pa., writes: "For holding rails when pointing them, I use the machine shown in the sketch given herewith. The parts of the frame are about 2½ inches square, or heavier if need be, to resist the strain. The stake *A* is 2½ feet long, and is driven into the ground two-thirds of its length, to support the machine. The lever *B* is 36 inches from *A* to *C*, and is bolted to *A*. The standard *C* is 10 inches from the pin to the fulcrum *H*; the upper part has a slot to retain the lever *D*. The lever *D* is 77 inches in length, and has the fulcrum bolt at *H*, and can be raised as represented at *D*, by the dotted lines, to receive the rail to be pointed between the jaws *G*. The ratchet *E* is 30 inches long, and 1 x ½ inch, firmly bolted to *B*, and extending from *B* in a segment of a circle from the fulcrum of lever *D* at *H*. The pawl *F* fastened to



A CONTRIVANCE FOR HOLDING RAILS.

lever *D* holds the lever *D* firmly at any position to the extent of the ratchet. The iron plates *G* are toothed so as to hold the rail from slipping when the lever is pressed down and held by the pawl and ratchet. The rail is shown by the dotted lines in the engraving.

What Becomes of the Sheep-skins?—Few persons have any idea of the industrial value of sheep-skins. The manufactures for which sheep-skins furnish the raw material are both numerous and important. In the city of New York alone, the sale of manufactured sheep-skins amounts to more than $5,000,000 yearly. A single manufacturer turns out 50,000 dressed skins weekly. Most of the skins are imported, as American skins are too small and light to be split. The best skins come from Calcutta, which is a curious fact, when we consider that a hot country is unsuitable for sheep. These large skins are split into two portions, the wool side being called "skivers," and the flesh side "fleshers." The whole skins are called "roans." The "roans" are tanned to imitate morocco, and are used as a substitute for the real article, which is prepared from goat skins. A large quantity of sheep-skin is used by boot and shoe makers for toppings, linings, and trimmings. Leather from "skivers" is used largely for binding books, instead of morocco; and that from "fleshers" is used for binding account books, being stronger than the skivers. Trunk makers, saddlers, pocket-book makers, hatters, glovers, makers of musical instruments, and furniture makers, use a large quantity of sheep's leather. "Chamois" skins are made almost entirely from "fleshers," as is also most of the buck-skin that is used for various purposes.

Greenhouses Taking Fire.

Our correspondence for one week last winter informed us of no less than four fires in greenhouses; we have repeatedly warned against this danger, and again do so. These fires occur when the greenhouses are heated by boilers, either from the smoke-pipe being placed too near the beams covering the furnace-pit, or by the flooring being placed too close to the upright chimney. In one of the instances related to us, a workman had thrown an old bag over the smoke-pipe to dry; this made a connection between the pipes and the beams, and the place took fire. When heated by flues, the cause is usually similar; something is carelessly thrown on the hot part of the flue, and the fire is communicated to the wood-work under the benches. The greenhouse structure is rarely burned itself, as it is usually damp, and the material of which it is made is not very combustible; but the danger to the plants is from smoke; that from the burning of a few boards being sufficient to destroy the whole contents of a large house.

The Value of Fall Pasture.—It may be supposed that so long as grass is green, and there is plenty of it, the pasturage is as good at one time as at another. This is a dangerous mistake. Doubtless much of the disease which occurs amongst stock, after the substantial growth of spring and summer has ceased, is due to this error. A wet season may cause a rank second growth of grass or clover, which is eaten with avidity; but this is deficient in nutriment, and too succulent to be healthful. Stock fed upon it fail to thrive, if they do not actually suffer. In course of time the digestive organs are disordered, and if the stock is neglected, the first intimation that anything is wrong, probably comes in the shape of the loss of some of them. The past season has afforded numerous examples of the fact here pointed out. An interesting experience of a western New York dairyman, accords exactly with our own, and is valuable. The wet weather which succeeded the harvest, started a luxuriant growth of oats from the shelled grain. The cows were turned upon this herbage, as an excellent addition to the feed. The butter was well colored, but the quality was so inferior that complaints poured in from the customers. This feed was worse than useless, it was injurious. As the milk comes from the blood, the blood of these cows was affected, and had it not been that the injurious matter was carried off by the milk, there might very well have been some serious cases of disease in the herd, as there have been in others in that locality.

Portable Fruit Packages.

We have several times advocated the use of a handier package for fruits, and especially for peaches. The Michigan peach-growers are far in advance of their brethren on the Atlantic coast, in respect to packages, and while we do not claim that they have the best that can be devised, we are quite sure that had their baskets been in use by the shippers from the Peninsula, the returns of the past season would have been essentially increased, even with poor fruit. When in a strange city, we always make it a point to visit the markets and produce-centers, and in following this custom in a recent visit to Chicago, were both surprised and pleased to see in actual use that which we had long been pleading for: a fruit package, which men, and women too, could carry without inconvenience. In New York we now and then see some unfortunate toting a basket or crate with both hands, or upon his shoulder, toward the car or ferry-boat that is to carry him homeward, and looking as if he were quite ready to give up the job in disgust. In Chicago we saw 20, if not 50, people carrying peaches from the markets, where we see one in New York, and all for the reason that the packages could be easily carried, and not because the fruit was cheaper, as it really sold for more than the same quality was selling at the same time in New York. As a suggestion for an improved package, we give (on p. 424) engravings of this Michigan basket; fig. 1 shows it as it stands, and fig. 2 allows its structure to be more distinctly seen. Elm, bass, and other cheap woods are used, and are cut into thin veneers. The basket is 8 inches high; 10 inches across the top, and 6 inches across the bottom. It is made of six pieces of veneer, each of which is 23 inches long; each piece is partly cut through at 8½ inches from the end, the middle piece of 6 inches forming the bottom; at each end of the pieces a hole is cut, and a slit is made to allow for the necessary spreading; the manner in which the pieces cross one another, is shown in fig. 2. At the top there is a thin hoop inside and out, and ¾ inch wide; near the middle is a slightly thicker hoop, ½ inch wide. A piece of No. 16 copper wire, 16 inches long, hooked at each end upon a heavy, large-headed tack, furnishes the handle. This basket weighs 9 ounces, and holds, slightly rounded, a peck of fruit. The peach-growers we met with, bought their baskets at 5 cents each; we were unable to find one who made his own baskets, but suppose they are very readily put together upon a mold or former. The baskets, when filled, are packed in pairs in a simple crate of slats, and all bother of returning of baskets is avoided. Persons were willingly paying 50 cts. for these baskets of a peck of no better fruit, than at the same time was selling for 50 and 75 cts. in New York for baskets of 2½ pecks. A person can carry one of these baskets home, or take it into car or stage, without inconvenience, and the quantity is as much as an ordinary family cares to have at a time. The fruit-dealers in Chicago have a little "dodge," which we never saw elsewhere. Each basket of peaches is covered with a piece of tarletan or millinet, of a bright rose or scarlet color, which gives to the fruit a most attractive appearance, and at the same time prevents handling; this is put not only over peaches, but over pears and other fruit.—We hope that our peach-growing friends will seriously consider these two points. How to produce better fruit, and how to put it on the market in an attractive form. If these ends are accomplished, peach-growing will still be a paying business.

Catch Crops.—The experience of every successive year shows that those crops known as "catch crops" may often be the most valuable. When a field is idle and not producing anything, then the farmer's money is not drawing interest. When the rye or oat stubble lies idle from August until May, half a year's interest is lost on the value of that field. It might have been sown to turnips, and if three roots weighing but four pounds each were raised on every square yard, there would be nearly 30 tons, or 900 bushels of roots—without counting the tops—to every acre. Or a peck of rape might be sown in August on an oat stubble, and enough feed raised in less than two months, to feed 10 or more sheep or two cows, per acre, until after snow fell. There would be a mass of roots and refuse left on the ground that would pay all the cost of the crop, leaving a handsome profit. It is in this way that a farm may be made to carry more stock, to produce more manure, and consequently increasing crops every year. The soil ought to be kept always producing, and if the term "catch crops" leads a farmer to suppose that such crops are of no value, he makes a very great mistake.

THE YELLOW-WOOD, OR VIRGILIA.—(*Cladrastis tinctoria.*)

The Yellow-Wood, or Virgilia.

About seven years ago, in ordering some trees for a new place, we included the one known to nurserymen as Virgilia. Each year since it was planted it has increased in beauty; in grace of form, lightness of foliage, and attractiveness of color, it has been a continuous source of satisfaction. This year it bloomed! and the long delicate racemes of pure white flowers, gave an added grace to that which before seemed perfect. Here is an American tree with every claim that can be presented by

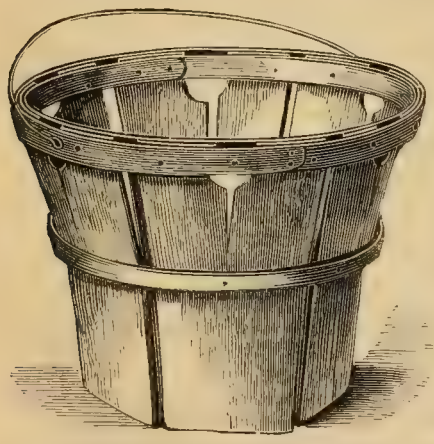


Fig. 1.—MICHIGAN PEACH BASKET.—(*See page* 423.)

any tree, which is almost entirely ignored by planters, who will go on planting maples, elms, mountain ashes, and the like—all good enough trees—until we get tired of the sameness. The trouble with the majority of tree planters is that they seem to know but few trees, and keep on planting those over and over again. How rare it is to see oaks, beeches, and ashes, used for ornament, not to mention the Liquidambar, Tulip-tree, and other beautiful natives. Almost every place, so far as trees go, is a duplicate of the next, while with such a number of fine trees to choose from, this uniformity can be easily avoided. The Yellow-wood was referred by Michaux to an exotic genus *Virgilia*, so named in honor of the poet Virgil, and this name is still retained in the catalogues; Rafinesque, finding it to be a distinct genus, called it *Cladrastis*, (a name, the meaning of which is obscure), and its proper botanical name is *C. tinctoria*. The tree rarely grows over 30 or 40 feet high, and a foot in diameter; the bark is smooth, not becoming furrowed even on old trees. The leaves have 7 to 11 leaflets, and the base of the petiole covers the bud of next year. The flowers are in loose pendant clusters, 10 to 20 inches long; they are of a pure white, except a small yellowish spot in the center, and have a slight fragrance; the general appearance of the flowers is a little like those of the locust, but they are of a purer white and in a more ample cluster. The fruit is a pod three or four inches long, containing four to six oblong seeds. The heart-wood of the tree is yellow, and gives up its color readily to water, though it is not easy to fix as a dye. The tree seems to be much restricted in its range, it being found only in East Kentucky and southwards along the western base of the Alleghanies. The Yellow-wood was formerly quite rare, but is now kept in the leading nurseries. It is easily raised from seed, which, if kept until spring should be preserved in sand, as, if they are allowed to become completely dry, they will remain in the ground a whole year without germinating. So little is this beautiful tree known and appreciated that a nurseryman told us he had to burn up a fine lot, which were getting too large for sale.

Roe's Seedling Gooseberry.

Sometime last summer the Rev. E. P. Roe, of Cornwall on the Hudson, author of "Play

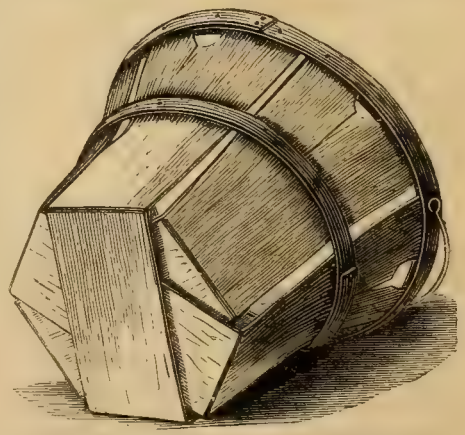


Fig. 2.—BOTTOM OF BASKET.—(*See page* 423.)

and Profit in my Garden," brought us a specimen of a gooseberry, in which bush and fruit appeared to be perfectly healthy, and the fruit was much larger than any of our native sorts,

abundant, and of a fine green color. Upon learning it was a new seedling, we had an engraving made of it, and requested Mr. Roe to give us its history, which he has done substantially as follows: "In 1826 Mr. William Roe purchased quite a large plot of ground in what was then the outskirts of the village of Newburgh, and stocked his place with the best fruits that he could then procure. That which was then a home in the country, is now a country-like home in the center of a large city. Mr. T. Hazard Roe is the present proprietor, and inheriting the taste of his father, has given his place a local reputation for its fine fruit for many years. Among the known varieties many seedlings were permitted to grow, and there are now natural pears, peaches, and apples on the place, that are very valuable, as well as a seedling raspberry that promises better than anything I have yet seen.

"But the seedling gooseberry, which I brought to your office, is perhaps the fruit of the greatest promise. For years I had been struck by the remarkable size and fairness of these gooseberries, and supposed that they were some very fine English variety that by some good fortune had not mildewed. Sometime ago I expressed my surprise to Mr. Roe that his gooseberries did not mildew, and then learned for the first time that they were a seedling variety, which originated on his place over fifteen years ago, and that they never had mildewed. I at once concluded that if it could be made to do as well elsewhere, it would be a great advance upon any variety of this berry I had yet seen. The bush is a very strong grower, and perfectly hardy. The variety will be thoroughly tested in various soils and localities, and the best judges satisfied as to its character, before it is sent out. Thus far I have never seen a more abundant bearer, the fruit being large, green, and fine flavored when ripe."

ROE'S SEEDLING GOOSEBERRY.

HARDY GARDEN VERBENA.

A Hardy Garden Verbena.

Several years ago a chap thought he would turn a penny by selling seeds of native plants; and he put out a catalogue of seeds of the "Flowers of the Prairies and the Rocky Mountains." He had sufficient botanical knowledge to get the names with tolerable accuracy, but he was careful to give no common names, only the systematic ones, which made quite a formidable array so far as a show of learning went, and the descriptions, evidently his own, were of the most glowing character. Some of our seedsmen, who should have known better, were caught by this person, and incorporated his catalogue with their own. A more worthless lot of thrash, speaking from a horticultural point of view, could not be imagined; had any one purchased these seeds, he would have been disgusted with "prairie flowers," as he would have found a number of well-known weeds among them, and the majority of other plants quite void of any claims to a place in the garden. It is but fair to say that the seedsmen who adopted this list in their catalogues, when informed of the character of the plants, immediately suppressed it. While the seeds offered were generally of undesirable kinds, there were a few out of the whole that were of real value, and some of them have found a place in the regular seed catalogues. In the list was one called *Verbena montana*, which professed to be from "the gold regions of Colorado." Every one knows the common garden verbenas, which present such a great variety of colors, and make the garden brilliant throughout the summer, but as soon as very hard frosts come are killed. The plants are very difficult to keep through the winter, unless one has a greenhouse, and a new stock must be procured in the spring, or else raised from seed, which produce uncertain colors, and are late in blooming. These verbenas are hybrids, and result from several species through many years of hybridizing and crossing. The plant to which we now call attention, and of which a flowering branch is given in the engraving, is a perennial, usually flowers the first year from seed, and forms a dense tuft three feet across, and keeps up a profuse and continuous bloom all the season, of abundant pale lilac flowers.

The seeds of this are in the catalogues as *Verbena montana*, and it is the name under which those who wish the plant must ask for it; there is no such species, and this did not come from the "gold regions of Colorado." This is not the place to discuss the botanical position of the plant; suffice it to say here that our native verbenas are much disposed to hybridize in the wild state, and present many interesting intermediate forms. This is very close to that form of *V. Aubletia*, which has been called *V. bipinnatifida*, though that is described as an annual. While not sure that it may be

referred to this, our object is to call attention to it as a pleasing garden plant, and one which offers to the amateur an excellent subject to experiment with in hybridizing or crossing; if a variety of brilliant colors could be obtained, and retain the hardiness of the present plant, it would be something worth working for, and introduce to our gardens a most acceptable novelty. The plant should be set in rather poor soil, as in rich soil it grows too straggling.

"Gardening for Pleasure."—Plants in Winter.

Perhaps the relationship between the two parts of the above title is not very manifest, and may need some explanation. Mr. Peter Henderson some years ago wrote "Gardening for Profit," which at once became a standard work; he then wrote "Practical Floriculture," which is the most useful work of its kind in the language. In his business as florist and seedsman, he has found that there is a large class of amateurs, who do not garden for profit, nor are they practical floriculturists, persons who have small suburban or country places, and whose gardening is done for the pleasure they find in it. Such persons wish to have all their directions for cultivating fruits, vegetables, and flowers, in a compact form in one volume, and to be instructed in the process most suitable to the amateurs. To meet the wants of this large class, Mr. Henderson has prepared a work, now published by the Orange Judd Company, the scope of which is indicated in its title of "Gardening for Pleasure." To give an idea of the manner in which the topics are treated, we give an extract from what the author says on a subject concerning which we at this season have numerous inquiries, viz.:

"PLANTS IN WINTER.—The plants best suited for flowering in winter may be divided into two classes. First, those requiring a moderate temperature, at night, say an average of 50 degrees. Whether the plants are grown in the parlor or sitting-room of a private dwelling, or in a greenhouse especially constructed for their culture, the conditions should be as nearly as possible the same; that is, uniformity of temperature ranging from 45° to 55°, and an avoidance of a dry atmosphere; it is easy enough in the greenhouse to get a properly humid atmosphere by sprinkling the paths with water; but in a room in the dwelling house, the only thing that can be done is to place pans of water on the stove, furnace, or whatever may be the source of heat. If plants are kept in a sitting-room or parlor, an east, south-east, or south aspect should be chosen. Plants of the class that may be grown at an average temperature of 50 degrees, are Azaleas, Abutilons, Ageratums, Carnations, Cinerarias, Catalonian Jessamines, Cape Jessamines, Camellias, Callas, Chorizemas, Geraniums of all kinds, Hibiscus, Hyacinths, Myrsiphyllum, (Smilax), Mahernias, Primulas, Stevias, Roses, Violets, and the various kinds known as *greenhouse* plants, which, together with those above named, are fully described in the florists' catalogues.

"The second class, or hot-house plants, require an average temperature of 60 degrees at night, the range of which, however, may occasionally run from 55° to 65° without injury. Of these we name the following: Begonias, Bouvardias, Clerodendron, Euphorbias, Epiphyllums, Fuchsias, Heliotropes, Poinsettia, Roses, (these will do in either temperature), Tuberoses, etc. The necessity for this difference in temperature is not absolute, as many plants will do partially well in either; but we make this distinction as a guide to those having a choice of temperatures, in order that they may select the plants that are best adapted to the one at command. In a greenhouse, particularly if heated by a flue, there is often a difference of five or ten degrees between one end and another: in such a case the plants named in the first class must be placed at the cool end, and those of the second class at the other.

"One of the most troublesome pests of plants grown in the greenhouse, or sitting-room, in winter, is the aphis, or 'green fly,' as it is termed; we have no difficulty in getting rid of it in the greenhouse, when it is separate from the house; all that is necessary is to get some tobacco stems, (such as are thrown out as refuse by cigar makers), and soak them in water for a minute or two; about half a pound or so for a greenhouse 25 x 20 feet is placed over a small handful of shavings, only enough to light the dampened tobacco, as too many might injure the plants by smoke; the burned tobacco stems give out a smoke that is quickly fatal to the 'green fly.' To thoroughly prevent the least appearance of this insect, the greenhouse must be fumigated every four or five days. We fumigate all our greenhouses twice each week during the entire year; our rule being that an aphis must never be seen upon any plant in the houses. If the greenhouse is attached to the dwelling, so that the tobacco smoke would find its way into the rooms, recourse may be had to another remedy; take these same waste tobacco stems and steep them in water until the liquid is of the color of strong tea, with this water syringe the plants freely twice a week, this will not only effectually destroy the green fly, but will keep in check most other insects that infest plants. Where only a few plants are kept in rooms, the easiest way is to dip the plants entirely in the tobacco water, moving them up and down in the liquid, to wash the insects off if they have a firm hold. The "red spider" is another pest to winter blooming plants, and wherever it is seen you may be certain that the atmosphere has been too dry, and very likely the temperature too hot, as it is rarely found in a cool, damp atmosphere. The treatment for this insect in the greenhouse is copious syringings with water, but where but a few plants are grown in the house, it is best to go over the leaves, especially on the under side, with a wet sponge. The red spider is so minute that it is hardly distinguishable by the naked eye, but its destructive effects are quickly perceptible, as the leaves upon which it works soon become brown, and if the leaves are closely examined, particularly the under side, the minute insect will be seen in great numbers.

"Another troublesome insect among plants that are grown in a high temperature is the 'mealy bug.' The insect is flat, of whitish brown, usually nestling at the axils of the leaves, where it is covered with a white powder, making it easily distinguishable; this is one of the most annoying of all insects that attack plants, as nothing seems to kill it, unless the remedy is strong enough to injure the plants; so that rubbing it off with a small brush is the only safe remedy that we would care to recommend amateurs. We find alcohol thrown on by what is called an 'atomizer,' sold by druggists for bedewing with perfumes, to be very effective in destroying the 'mealy bug,' as the alcohol reaches to every part of the plant, but we find that some plants when in very soft growth are injured by even this light application of alcohol. Another pest, not an insect, but a vegetable parasitic growth known as mildew, affects but few plants in-doors except the rose, still as it is most injurious to this, we give the most effectual remedy for destroying mildew on roses either outside or under cover. Boil one pound of lime and one pound of sulphur in two gallons of water, until it is reduced to one gallon; allow the liquid to settle until clear, and bottle it for use; one gill only, no more, of this liquid, is mixed in five gallons of water, and this syringed thoroughly over the rose plants in the evening. If in the house, so that syringing can not be done, dip the plants in it as recommended for the tobacco water. As with most other remedies, we prefer to use this lime and sulphur mixture as a preventive rather than a cure, and we apply it to our roses at least once a week, even though there is no appearance of mildew. In proportion as plants are kept free from insects and mildew, so will be their vigor and their thriftiness.

"I may here warn the amateur against the too common practice of placing plants in too large pots. As a general thing, when plants are received from the florists, they are sent without pots, and are usually in a condition requiring them to be shifted into a pot larger than they had been growing in; for example, if they have been growing in a pot of 3 inches diameter, place them in one a size larger, or 4 inches in diameter; if they were in 4-inch pots give them one 5 or 6 inches across, and so on. Though we entirely ignore the use of crocks, or drainage in pots in our own practice, where we have always the proper sizes to use in potting, yet in cases where a suitable sized pot is not on hand into which to shift, (for example, if a plant that has been grown in a pot of 3 inches diameter, must be put in one of 6 inches), then by all means fill up one-third of this too large pot with broken pots, charcoal, or some such material to drain off the surplus moisture that would otherwise be injurious, in consequence of the pot being too large for the plant; but if the pot into which it is shifted is properly adjusted to the wants of the plant, the putting in of crocks for drainage is worse than useless, I care not what the plant may be. Our greenhouse establishment now covers nearly two acres, yet not a pot is so 'drained.' The need of a larger pot is shown by the earth becoming so filled with roots that they well cover the outside of the ball, but shifting into a larger pot should be done while the roots are yet white; if left until the roots get thoroughly matted, brown, and hard, it is too late, and the future growth will be seriously retarded. If the plant has been allowed to reach this condition, which we call 'pot bound,' it is best to lay the ball of roots in one hand and slap it smartly so as to loosen it; by this treatment the new fibres strike out more readily from the hard roots than if left with the ball still compact. After shifting a plant, give it one good watering, so that the soil will be thoroughly soaked to the bottom of the pot; but after that, keep rather dry until there are indications of new growth. We are often asked as to the use of guano and other fertilizers on in-door plants. As a general thing we use none in our own practice, preferring to shift the plants into fresh soil at the proper time, rather than to do so, and we would advise the same to those of less experience, for the use of all such stimulants is, under certain conditions of the plants, dangerous in unpracticed hands."

Some of the New Grapes in Ohio.

BY GEORGE W. CAMPBELL, DELAWARE, O.

The past season has not been a favorable one for grape-growing in Ohio, and I think the same remark will apply to the west generally. The "hybrids" have mostly had rather a hard time between mildew and rot, and have made a poorer record with me than for several years. Delawares, except on walls and in sheltered situations, have lost their leaves by mildew, and have not ripened their fruit.

Croton has perhaps been a little better, holding its foliage with somewhat less mildew; but in general habit seems much like the Delaware; and I think wherever that succeeds, Croton may be planted with fair prospect of at least equal success.

Senasqua has remained quite healthy, both in fruit and foliage, and from my present and past experience, I regard it as one of the most promising of the newer introductions of black grapes. It is claimed to be a hybrid; but its foliage seems nearly equal in health and hardiness to the pure natives. It is a little later than Concord in ripening, but is a grape of fine quality, tender in pulp; vinous and sprightly in flavor, and without foxiness. Another grape by the same originator, Mr. S. U. Underhill, which has been named

Irving, but not much disseminated, I have fruited several years, and have found it so invariably healthy, I cannot but regard it as very promising. It is a large white grape, very handsome in appearance, and very good in quality, as well as free from foxiness. It may be a little too late in ripening for extreme northern localities, or where Concord can not be ripened—but it is in general habit of growth equal to Senasqua, and worthy of trial.

Secretary is the name of a Clinton hybrid, origi-

nated by Mr. J. H. Ricketts, of Newburgh, N. Y., which has held its foliage and ripened its fruit for the past two years better than most of the older hybrids. This is a fine large black grape of excellent quality, and I think promises to be valuable.

Eva, a pure Concord seedling, was originated by Sam'l Miller, at the same time he produced the Martha; but the original vine seemed unproductive while young, and it was not disseminated, and was for a long time almost lost sight of. It has recently been again brought to notice, and found to be superior in quality to the Martha, and is apparently not less productive. It is a little later in ripening, more sprightly, and less foxy than Martha.

The Lady grape, also a Concord seedling, has remained healthy in fruit and foliage, and has ripened its fruit perfectly, but some two weeks later than last season. It is, to my taste, the best of all its class of white hardy grapes, and better than any other *very early grape* yet introduced, so far as I have seen and tested them. Another of Mr. Underhill's hybrid grapes, named

Black Eagle, has done very well the past season, and is worthy of notice. It is a large black grape, with long, rather loose clusters, having much the character of Hamburgh grapes, and ripening a little earlier than Concord—about with Delaware. Its foliage is very good, and the fruit showed very little indications of rot.

All the hybrids above mentioned have been better in health of fruit and foliage than the average of Rogers' Hybrids; and the seedlings, Eva and Lady, have been entirely healthy, showing neither mildew nor rot, notwithstanding the general unfavorableness of the season.

How to Make Money on Peaches.

The papers had frequent articles in September and October upon the disastrous results of the peach season, stating that many orchards will be grubbed up, and that parties largely engaged in the business will go out of it and not send a single peach to market hereafter. We should not be surprised if many short-sighted persons did grub up their trees; the operation would be no more foolish than sending such absolute trash as was three-fourths, if not more, of all the peaches which came to the New York market during the past season. If any fairly decent fruit came to market, it was put up in such parcels as to preclude the majority of persons, who would gladly buy, from taking them home, without more expense of money, or main strength, than the fruit was worth. But there is a more important question than that of packages, that of the quality of the fruit itself. It comes in our way to see some of the largest lots offered for sale, and it has been very rare that we have seen any fruit that, according to the ordinary standard, would rank as first-class. Every fruit-grower, and especially every peach-grower, should know that in fruit, as Webster told the young man about the legal profession, there is always "plenty of room at the top." No matter how slow Black Hamburgh grapes may be at 75c. or $1 the pound; let any one bring in a lot of Gros Moroc and they will meet a ready sale at $2 per lb. Let the market be so glutted with pears that Bartletts are hawked about the streets by the public venders, yet P. T. Quinn's selected Bartletts, or Mr. Leighton's extra Duchess, packed in their excellent style, have a rapid sale at paying prices. Our "Walks and Talks" friend can always sell his Northern Spy apples at prices which sound large compared with what the common run of fruit is bringing, and our lamented friend Knox, used to get 50c. for about a pint of his Jucunda strawberries, when the same bulk of other berries were slow sale at 10c. Now it is just so with peaches. Growers have regarded quantity rather than quality. We have been in the most celebrated Peninsular orchards at picking time, and have seen the branches touching the ground with their weight of fruit, when they did not break altogether; we heard much of the number of baskets this man or that man sent to market, but very rarely was the quality of the fruit mentioned. Let us suppose that a variety, say Crawford's Late, averages 4 oz. to the peach, (this is for illustration only, and has no reference to actual weight), and brings $1 the basket; now does any one at all familiar with the fruit market, doubt that Crawford's Late, averaging 6 oz., would bring $1.50, and if it ran to 8 oz., would readily command $2 a basket? Before our friends cut down their peach orchards in disgust, will they not try once more, and in the first place raise good fruit? The first step is to reduce the crop by shortening-in this past season's shoots; it is likely that in this year of overbearing, but poor provision has been made for next year's crop; but if the season's growth is weak, so much the more need of giving it less to do. At least one-half of each of the past season's shoots should be cut away, shortening each slender branch by so much, and where there is an excess of young wood, thinning out altogether; this should be done in late winter, or before any growth starts. Then next season, after the fruit has set, it should be thinned, according to the crop; it is safe to say that in ordinary years two-thirds should be removed, but no rule can be given, and it will no doubt pay to go over the trees more than once. Here comes the objection. "It will not pay." If all the fruit is left on it must be picked at some time, and it is only changing the time of the labor, with the very certain chance that the fruit which is left will be worth at least twice what the whole would be were it left on. An English friend of ours who was here during one of our abundant peach seasons, told us that he had not seen a decent peach in America. He was in the main right. How can it be otherwise when the trees are left to bear all they will, the peaches often in ropes and crowding one another? In the gardens at Montreuil, which supply the Paris market, the trees being trained in espalier, are never allowed to have more than one peach to 6 or 7 square inches, and oftener one to 10 or 12. To be sure European practice can be no guide for us, but it may often afford us hints. If there is any one thing thoroughly settled in fruit culture, it is that good fruit will pay, and that one of the methods of getting good fruit is to *thin*. Poorly nourished, poorly developed, half ripened fruit that never should have been sent to market, we have had enough of. Now let us have the best peaches that can be raised, sent to market in as nearly ripe condition as possible. Those who are familiar with peach-growing as now carried on in Delaware and Maryland, are aware that all the best fruit is either made into brandy or given to the pigs. A peach as it is sold in the markets was picked while hard, and has softened since it left the tree, and is vastly inferior to the same fruit ripened upon the tree. Now we are sure that when the attention of growers is given, as it inevitably must be, to quality, some method will be devised through improved means of packing and transportation, by which peaches may be allowed to approach much nearer to full ripeness upon the tree than they now are, at least for the near markets. Having improved the quality of the fruit, the next consideration is the improvement of the packages, which are now so cumbersome and awkward to handle as to almost prohibit those who would willingly pay a good price, from purchasing at all. The inconveniences of the present basket and crate was sufficiently shown last month. A description of the basket in use in Michigan is given in another article.

THE FLORIDA TORREYA.—Henry Winthrop Sargent, Wodenethe, Fishkill on Hudson, N. Y., favors us with the following: "In Dr. Gray's article in your issue of last July, and now republished in the Gardeners' Chronicle of Sept. 4th, entitled "A Pilgrimage to Torreya," he says "the ultimate fate of the plant sent to Mr. A. J. Downing" is unknown to him. I can supply its history: Mr. Downing for many years kept the plant in his greenhouse, and when this was broken up, he gave it to me. I then subjected to a course of treatment detailed on pages 475-476 of my edition of Downing's Landscape Gardening, until it became ten feet high and quite as wide. After several years of apparent hardiness, it suddenly turned brown in the course of one night, and perished in a few days in the month of April, after going through the winter, and many previous winters without flinching. I always supposed that just as the sap was starting, it suddenly received a *coup de vent*, as the French would say, *i. e.*, some peculiar draft of wind, which gave it its death.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Childhood in City and Country Compared.

If all the stages of life were shut out from our view except childhood prior to the age of eight, enough would remain to constitute a respectably sized world, and afford themes for the reflection of a few venerable grandfathers who might be permitted to remain to chronicle the ways and doings of the young folk. The child-world is full of mimic passions, hopes, fears, tempers, solicitudes, devices, joys, and griefs, just as real to the child-mind as they afterward become in enlarged proportions in grown-up people.

The city child opens its eyes upon whitened or papered walls enclosing nursery furniture, which, of course, includes crib or cradle, until old enough to face the city atmosphere, when it is trundled in little wagons by careless nurses or heedless sisters, up and down a single side-walk two hundred feet long. Upon the dawn of consciousness it begins to gaze at brick or sand-stone houses with high stoops, while a panorama of butchers' and slop carts, baker and vegetable wagons, lager beer and dry goods' trucks pass before its eyes. Beyond these it soon becomes accustomed to the shouts and screams, the blasphemy and filth of dirty children. Nowhere but the street. The small yard is too full of damp clothes for air or exercise. When it is old enough to walk and manage its own legs, neither mother nor sister can confine it to house or side-walk. It explores the world around the corner, climbs stoops, sits on the curbstone, plays in the gutter, and runs in the street to vex coachmen and teamsters, while mamma is frantic with fright, and from sheer worriment occasionally curses the hour when the child was born. Such, in brief, is the life of a city child, when parents are not wealthy enough to live adjacent to a park, or to indulge in a carriage-ride, or buy a velocipede.

The child born in the country passes through the same experiences as the city child for a few months, except that if it be summer it may be rolled on to the piazza or out on the green sward to be fanned by the pure breath of heaven, without the disturbance of passers-by. And except too, that when it is weaned, the child is not transferred from its mother's to watered or condensed milk. The difference between city and country becomes more marked as the child grows to consciousness and to the use of its limbs. It rolls on the grass, makes sand-hills in the road, watches the tumble-bug as he pushes the ball bigger than himself, splashes in the running brook, culls the wild flowers, watches the bee as it lights on the thistle. How the child-mind grows? It has nothing to unlearn—its whole capacity is stretched to learn. Its mind revolves and catches impressions from every side. It gathers in more of the elements of knowledge before the age of eight than in after-life. We have shown how limited is the opportunity for expansion in the city, but in the country it is boundless. What does a country child know before the age of eight? It has mastered enough language to tell all its wants; it can name all the members of the family and all the regular visitors; it can designate every article of furniture in the house, from garret to kitchen, and specify their uses. These acquirements it possesses in common with city children, and in these particulars has no advantage; but take the country child out doors; it understands the distinction between trees, and flowers, and grasses, and can distinguish the crops, vegetables, and fruits; it is familiar with fences, rocks, brooks, hills, vales; it is acquainted

with garden and farm tools, and can handle many of them; it comprehends the domestic animals, horses, cows, sheep, pigs; it delights in the barn-yard groups of hens, ducks, and geese; together with the fish of the streams and the birds of the air. Then it discerns the world above—clouds, rainbows, sun, moon, stars, light and darkness, snow, hail, and rain; it hears the voice of God in the thunder, and sees His power in the lightning! Thus the heavens above and the earth beneath, with all their variety of beautiful objects, combine to enrich the child-mind and store it with knowledge enduring as itself. No man having a country origin, with any sense of gratitude in his heart, fails to bless his Maker for childhood memories. Those happy childhood scenes re-appear in his memory to cheer many a disconsolate hour, and re-awaken his love for childhood innocence, purity, and joy. When young parents contemplate a move from country to city, let them consider the interests of their children. Let them first solve the problem—which will pay best, to make more money, which is the usual object, (but rarely attained,) or deprive their young children of pure air, sweet water, healthful sunshine, and familiarity with God's beautiful heaven and earth? How superior are the opportunities of the pious parent living in the country to instruct and mold the young heart, when such rich displays of God's works are ever before it. I have tried both city and country, and brought up children in each. I do not hesitate, therefore, to say to any countryman, stay where you are! C. C. N.

A Royal Dish—"Dom Pedro."

People are apt to look upon royal personages as made of finer kind of clay, and fed on nicer meats than common mortals, while, in fact, they have much the same wants and tastes as the rest of us. Queen Victoria is said to be remarkably fond of cold mutton, and we have strong circumstantial evidence to show that Dom Pedro, emperor though he be, takes kindly to "warmed over victuals." Being in a New England state a few months ago, we dined in a family where both husband and wife are appreciative readers of the *American Agriculturist*. A dish came upon the table which we did not recognize from its external appearance. "Are you acquainted with the mysteries of Dom Pedro?" asked the wife. We had to acknowledge ignorance of royalty and all its mysteries.—"Here then," said the husband, "is something for the *American Agriculturist*,"—and between the two we learned all about the dish. It was called Dom Pedro because it was introduced to notice by his majesty's cook, while D. P. was visiting England, and our friends learned about it while they were in that country shortly after. It is simply a clever way of warming up, and making a savory dish of cold meats. Figure 1 is the affair complete, and in order to show its arrangement more distinctly, a section is given in figure 2. It is a tin dish, and as it is to come upon the table, may be of a pleasing form; bits of cold meat are put in the lower part, and what gravy may be left poured over them; if there is no gravy,

Fig. 1.—"DOM PEDRO" ENTIRE.

butter, water, and seasoning may be added. Cold vegetables may, if desired, be put with the meat. Fitting into the dish, a short distance below its upper edge, is a diaphram, or plate perforated by numerous small holes, and furnished with a long handle; this is put in place after the meat is prepared, and mashed boiled potato is heaped upon it in such a manner as to close every crevice. The dish is then set in the oven, and is allowed to remain there until the surface of the mashed potato is nicely browned. The meat will be found properly heated through, and not hardened as it often is by too much cooking, and all the flavor is retained; any steam which would otherwise pass off, is caught by the potato. In serving, the piece which holds the potato is lifted off and set upon a plate. There are some persons who affect to despise these little household economies. We once heard the wife of a clerk, whose salary was not large, say that her husband never wished to see meats upon

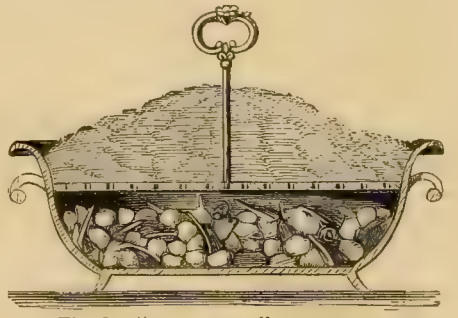
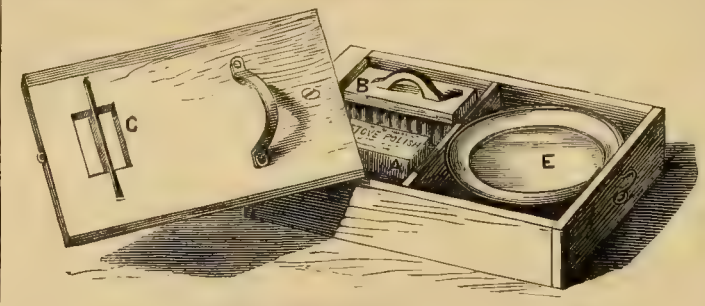


Fig. 2.—"DOM PEDRO" IN SECTION.

the table a second time in any form, and it is not rare to find those who think that there is something poor and mean about warmed up food, and these are generally those who can least afford costly living. Perhaps if such persons knew that we met with this dish of warmed up meats on the table of those who rank high among American sovereigns, and that it has the endorsement of royalty itself, they might look with more favor upon such attempts of the frugal housekeeper to make the most of all good gifts, and let nothing be wasted.

A Box for the Stove Polish.

Probably no article used in the household is, so to speak, more apt to "lay around loose," than the



BOX FOR STOVE BLACKING AND BRUSH.

stove-blacking. Polishing the stoves is not a job much relished by mistress or maid, and when it is over, the articles used are put in an odd corner as quickly as possible. Our ingenious correspondent, L. D. Snook, Yates County, N. Y., who is always contriving some clever household convenience, sends a drawing of a handy box for the stove-polish, which contains the material and the necessary appliances, and when not in use shuts up and may be set in any convenient place, being not unsightly if exposed. The box is one foot long, seven inches wide, and four inches high, with partitions, and a cover, which turns upon a screw, as shown in the engraving. There is a place for the cake or polish, *A*, the brush, *B*, and the mixing plate or dish, *E*. The cover has an opening, *C*, which, when the box is closed, comes directly over the mixing dish; across this opening is placed an old knife blade, or a bit of iron filed sharp. The cake of polish is pushed across this blade until a sufficient quantity for use is scraped off, and falls directly into the dish, where it is to be mixed.

COMMON SENSE IN THE HOUSEHOLD.—In looking for something in the excellent work with the above title, by Marion Harland, our eye happened to be caught by this bit of really *un*common sense: "Never stand when you can do your work as well while sitting."—Every housekeeper, and especially every mother should heed this. Have a variety of seats of different hights, from the low cricket to an office stool of moderate hight. It is a matter not only of comfort, but health.

Home Topics.

BY FAITH ROCHESTER.

A Despondent Sister.

A farmer's wife away out in Oregon, wants me to give her some counsel that may help to keep her out of an insane asylum. Whether I can do that or not I can not say, but I shall venture to make public a part of her letter, knowing that the private experience of many a woman will assure her of the truthfulness of this woman's story. It may comfort another almost shipwrecked sister, to know that she is not alone in such experiences, and it may do her good to think over the whole subject, with its relation to insanity. Some of these severe "crying spells" have happened to me, and it has helped me out of them, I think, to remember how some of my early friends used to "cry and cry" sometimes, in discouragement with their lot. One of them was the mother of four children, the the eldest only six years old. Two others had only two children each, at the time when I saw their tears. All three had very indulgent and helpful husbands, and their moans were over their own incapacity to meet the supposed requirments of their positions. All of them are now happy wives and mothers. The one who had four babies on her hands when I saw her eyes red with much weeping, and heard her dispairing story, wrote me not long ago a very happy account of her little family, "all helpers now," saying that she could not foresee this pleasant state of things when she was "bearing the burdens of their infancy."

The Oregon woman writes a long and frank letter. Among other things, she says: "When I am well and have sufficient help to do my work, I am almost always cheerful and hopeful, but I *can not* keep good spirits when I am sick, and tired, and sleepy, as I am about half of the time. When I tell you that I have three children, and the eldest is only five years old, you will know what I mean by 'sick.' It is a small family, but I am a small woman—of small ability in the way of work—or so I suppose, for I know I don't accomplish as much as my husband's mother and sisters used to, and I am tired to death much of the time. I seldom have a hired girl, and then only for a few weeks at a time, for we are too poor to pay a girl's wages. I work all day long until I am ready to drop down, and then go to bed with the work not half done. My house is dirty, my children are dirty, my husband goes ragged, I wear my own clothes ragged and unironed—and yet I can not get my work 'done up' any day or any week, as I know it should be done. Yet I had hope until lately, that I should soon find my task lighter and easier to perform, as the children grew old enough to help, but now I am in despair again. My children are very dear, and are welcomed with love—I would not object to a large family, if I could take care of it. But to see them so neglected, to be so cross to the little ones as I am sometimes, because so very tired, it fills me with remorse and shame, and so I cry, and when I get to crying I can not stop. Life looks so dark and hard to me, and I pity the children, and my husband too. Shall I confess it? sometimes I feel very hard towards my husband, and he is a good man too. It used to seem to me it would be a great relief to tell him how I felt, and talk with him about some way of escape from the despondent moods and crying spells. But he only feels astonished that a person 'of my culture'

should give way to anything of the kind. He thinks the grace of God should be sufficient to keep me always patient, and cheerful, and courageous. Sometimes I cry for a day or two, more than half of the time. I feel too weak to stop crying. At such times my husband helps me less than ever, and scarcely speaks to me. He thinks I am a badly-behaved child, and ought to be ashamed of myself. It seems to me if he would only talk to me about something interesting, or take hold and lift a little on the burdens that are beyond my strength, I could stop crying, but he hates my tears, and just tries to get out of the way of them, and so he goes off and leaves undone some little offices that he is accustomed to perform, in his haste to get away. He regards it all from a moral standpoint, but to me it all seems based in the physical. I *never* fall into these bogs except when I am worn out and really ill, and then I tumble in, and am over head and ears in trouble before I know what I am about. Now do tell me whether I can stop it just by summoning my *will* to resist the crying demon; or *can* I do it by prayer and faith, as my husband thinks? One time when I cried so much and long, and couldn't stop, I got really frightened, because my thoughts kept running on modes of suicide. I haven't cried so hard since, but I never since have let myself get so tired when in such a weak condition. It seems to me I *could* go crazy if this thing went on, and I want you to help me keep out of an insane asylum—where, it is said, so many hard-worked farmer's wives go."—Yes, I think one can resist the crying demon, and overcome him by force of will, if one's will is only strong enough, but it must be called into service before it has become weakened by physical exhaustion. One's will power does certainly depend much upon one's health or disease. Let this inquiring woman use her will to resist those causes that bring on physical weakness and weariness. Let her resolve to do her best not to work beyond her strength. She must study to *simplify* her household ways in every possible manner. It is better that all of the clothes washed should go unironed and be used so, than that she should wear herself all out in ironing them. The simplest wholesome food must suffice, and if the needed help can not be had otherwise, the husband must be expected to help about the housework, though it interferes a little with very important out-door work. Let her use her will to make herself stop work and go to bed at bed time, or to sit down, or lie down, and rest, when sure that she needs such rest. This will probably keep off crying spells.

Yes, prayer and faith will save this woman, and all in like condition. Such vital faith in God's laws as makes one reverently obedient to them, to the best of one's ability. Faith like this, accompanied by prayer for light and for grace, will enable a woman to do the best she can, and trust God for the rest.

Men can not understand the situation. They do not know what it is to have such a nausea for weeks in succession, as makes the smell of cooking almost intolerable; to have such keenness of senses as makes one long for scrupulous cleanliness everywhere, without the labor of constant cleaning. Mothers suffer grievous wrongs, but it is idle to blame the husbands, for usually "they know not what they do."

I have seen a good deal of dyspeptics, and I know how useless it is to argue with them, when they have their "poor" fits, and can see nothing but the alms-house in prospect for themselves and families; I know how common it is for them to believe that their friends are all against them, and to torture their minds with all despondent thoughts and harrowing memories. One learns to see how surely certain physical signs of dyspepsia accompany such states of mind. The way to avoid such troubles, is to keep one's stomach in good order. Just so it is with this woman, who finds it easy enough to be cheerful when she is well. Let her study to keep herself in good general health, and she need have no anxiety about hysterics or insanity.

Mending Tin-ware.

It is sometimes very convenient to be able to mend your pans and pails, it is all the better if one can do it easily, and without any soldering iron.

I'll tell you what a traveling tinker told me. We have proved by experiment that he told the truth, and we find it a great convenience to follow his instructions.

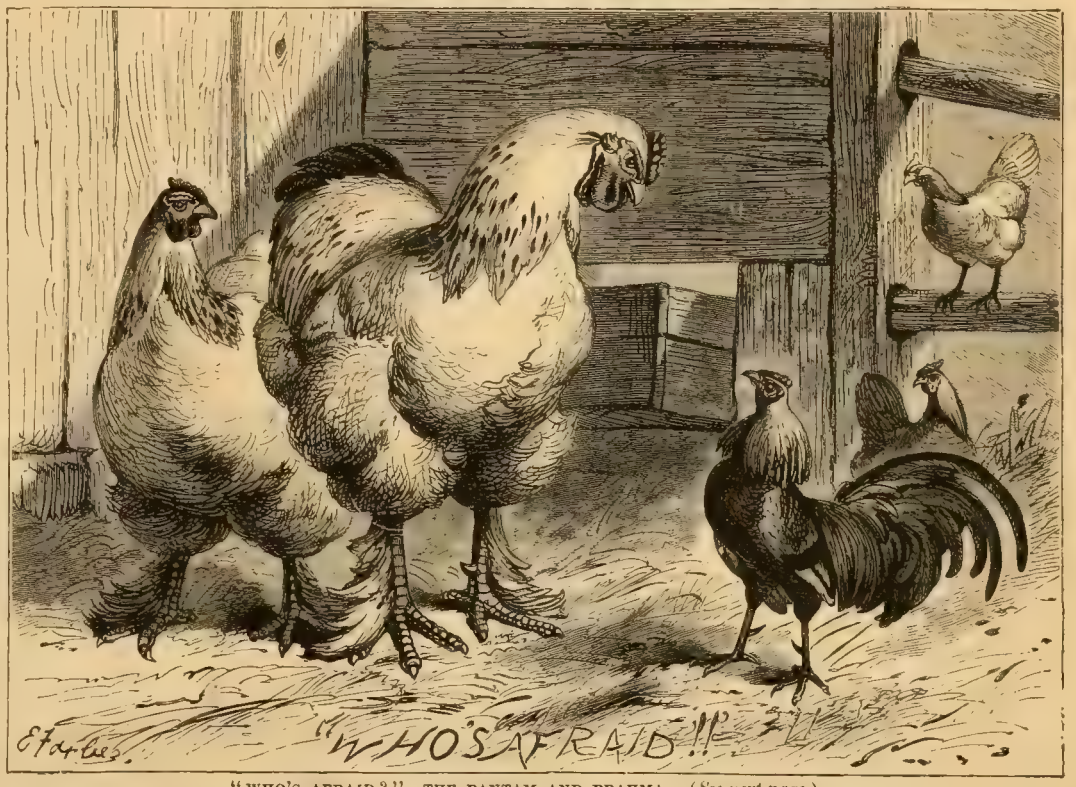
You use a soldering fluid, and this is how you make it. Buy from a druggist an ounce or other convenient quantity of muriatic acid. Handle it carefully, for it is powerful stuff, and "eats" everything with which it comes in contact. Turn it into an old teacup or bowl, and put into it a few small strips or parings of zinc, such as you can get from a tinner. No matter how much you put in, as the acid will only take up a certain amount, and the rest will remain in the bottom. Don't turn it back into the bottle until it has ceased to effervesce. Then put the liquid into the bottle, and provide a small stick of wood to apply it with. After the acid has dissolved the zinc, it is much less corrosive. The muriatic acid will probably cost but a few cents, the zinc probably will cost nothing, and a bit of soft solder only a trifle.

So now you are set up with tinkering material to last a long time—and this is the way to use it. Suppose that the article to be mended is a tin-pan with a hole in the bottom. Turn it bottom upward, and scrape around the edge of the hole until the tin is as bright and clean as you can make it. Then wet it with the soldering fluid, lay a little lump of solder over the hole, (not too large), and hold it over the blaze of a lighted candle, which burns on the inner side of the pan. The solder will be melted down flat, and fixed fast to the pan, and the job is done. The tinker said he added a little sal ammoniac to his soldering fluid, so as to make it mend iron, copper, and steel, but it is not needed for tin-ware. Remember that muriatic acid is very corrosive, and great caution must be used not to get it upon the clothing or other material that may be injured. [This soldering fluid we have long used, and several years ago recommended in an article on tinkering. It is employed by tin workers who use a soldering iron. We have never tried to solder with the heat of a candle, in the manner described, but have done some kinds of work very successfully by the aid of a spirit or alcohol lamp, which makes no smoke. Ed].

Foot Muffs.

I am much pleased with a present just received through the mail—the work of younger sisters. It is a pair of "foot muffs," to be worn in bed on cold winter nights. They are a great comfort to a person who has the care of small children, and is liable to have to step out of bed more or less during the night. They are of clouded zephyr, knit on wooden needles, garter fashion. Forty stitches are set up, and the knitting proceeds back and forth across the needles, until the strip is about ten inches long. Bind it off, and double it together, and make it into a bag, whole at the bottom, and with a seam at each side. The seams in my "muffs" are crocheted together, but they might be loosely sewed with zyphyr like that used in knitting. With a coarse crochet needle make loops around the top of the bag, crocheting a long stitch into every third stitch around the top of the bag, and joining them together by chain-stitch. These loops are for a rubber tape about ten inches long. Crochet scallops around the top, as ornamental as you like.

This bag does not look much like boot, shoe, or slipper, but put it on your foot and it answers nicely for a foot warmer. A pair of foot muffs would be a very suitable Christmas present for any invalid. The number of stitches required, would depend upon the size of the needles. The knitting should be loose and elastic.



"WHO'S AFRAID?"—THE BANTAM AND BRAHMA.—(*See next page.*)

A Pretty Vine for Shade.

I have never seen any mention of our very common (in Minnesota) "wild cucumber vine." I like it much, because it grows so rapidly, and affords such abundant shade, and because it is also so clean and so pretty. It grows in sun or shade, and is the easiest vine I know of to raise for shading porches and arbors. The botanical name is *Echinocystis lobata*. It belongs to the same family with the melons, cucumbers, and the like; it is a native, growing in rich river soils from Canada to Pennsylvania and Missouri. The flowers are small and greenish-white, growing in long graceful racemes, and when the vines are in blossom, the breeze blows from them a pleasant and peculiar fruity fragrance. The fruit is about the size of a butter-

nut, and when ripe thin and bladdery; it breaks open at the lower end, and lets out four seeds, similar to those of the watermelon. Children like to harvest these cucumbers, and gather the seeds; but if chickens are at large, they will dispute possession with the children. However, enough will probably get trodden into the ground to ensure a crop for the following year. The vine is said to do best when the seeds are planted in the fall. They come up in spring with large seed-leaves, like a squash vine, and are easily transplanted, or may be pulled out at any time.

I have written this with some fear of the botanist who presides over the *American Agriculturist*, lest he might consider me out of my sphere, but the simple vine I praise was new to me when I came west, and has given so much pleasure to me and my friends, as a shade for rustic porches and arbors, that I have often wished to say a word in its favor. [We quite agree with Mrs. Rochester, as to the utility of this vine. Some years ago when we lived in the west, there was near by a very large wood pile, which was placed so near the road as to be conspicuous, and unsightly in the extreme. This vine, which was very common there, came up around the pile, and soon completely covered it with its foliage, and instead of detracting from the neat appearance of the place, it was all summer a bank of verdure, having at a little distance the appearance of a tall hedge planted for a screen. It is in very common cultivation in the western states, and our correspondent has not at all overestimated its utility and beauty. It is one of the things which we propose to illustrate. ED.]

Patterns for the New Under Garments.

I receive repeated inquiries concerning these patterns—as to where they may be obtained. To the best of my knowledge, the Dress Committee of Boston, still has its rooms at No. 4 Hamilton Place, Boston, Mass., and thither all inquiries should be sent. Be sure and put "Mass" on your letter, else it, like one of mine, may go hunting through various states in search of Boston, until some Post Master who has heard of the "hub of the universe" suggested "try Massachusetts."

BOYS & GIRLS' COLUMNS.

The Bantam and the Brahma.

Is there anything more comical than the airs put on by a Bantam rooster? Nothing that we know of, unless it be the way certain boys behave before they have been to school, or mixed much with other boys. These Bantam boys rule the roost at home, all other youngsters stand aside, and it is very amusing to see how one of these boys, when he goes to school, and tries to put on the airs of superiority which were allowed at home, will get suddenly taken down, and made to find his own place, not only in the class, but in the play-ground. School teaches valuable lessons that are not learned out of books. A boy can be taught all the studies by a private tutor, or by his parents or older sister, but such a boy is never educated. It is said that marbles are finished by putting the rough pieces in a stout bag, which is tied to the arm of a wind-mill, and while they go round and round the marbles rub against one another, and finally all become round and smooth. It is just so with boys, they are the marbles, the school is the bag, and the daily meeting at class and in the play-ground, and on Saturdays, is the revolving of the wind-mill that rubs them together. It is bad for the boy who has sharp corners of selfishness or conceit, they are very soon knocked off, and if the boy is given to bragging, or worse than all, if he is disposed to play the bully, how soon he gets the nonsense taken out of him! The picture of the Bantam, little conceited thing, challenging a big Brahma, reminded us so much of some youngsters, that we find ourseves writing about boys instead of birds. Pictures of this kind generally explain themselves, and any bright boy or girl can see the whole story of this without its being told; but we sometimes like, when you have enjoyed the picture as a picture, to tell you of something it shows us, which you may not see. Both Bantam and Brahma are fowls, yet how unlike; the one, small, neat, active, and full of life and courage, and the other large, clumsy, and so indifferent that it will not try to get over a fence four feet high. Naturalists are not agreed as to whether our domestic fowls all came from one or several wild kinds; it is now impossible to be sure about this, as they have been so long domesticated; the Chinese have a record that fowls were introduced into that country 1400 years B. C., and it seems quite certain that they were known in Europe in the 6th century B. C. From these early times fowls, no matter what they may have started from, have been bred; some were bred for small size, and others for large size, and our picture shows the two extremes in the Bantam and the Brahma. The picture, which is on the page before this, really belongs to the Boys and Girls, but it is put there because it will be printed better than if it were here. It is a little awkward to have the picture in one place and the talk about it in another, but we can't help it sometimes.

November.

From what has already been said about the numbered months, you hardly need to be told that this gets its name from being the 9th month of the Roman year, *Novem* being the Latin for 9. This month is a sort of battle-ground between winter and autumn; sometimes autumn holds its own for a while, and we have pleasant days, but winter sends along his skirmishers of fog and chilly, damp rains, and usually succeeds in establishing himself before the month is over. Such fogs as this month often brings us who live near the coast! So dense are they that we cannot see across the street, and in the cities the gas is lighted in the offices and stores. But it is not worth while to look forward to the unpleasant things of the month; they are sufficient when they come. If we were to ask "What is there pleasant about November?"—A chorus of young voices would shout—from end to end of the country, "Thanksgiving."—Yes it is thanksgiving time which makes this month memorable, and all its fogs and sleets cannot chill the happiness of this holiday. May each one of you enjoy this purely American family holiday, with thankful hearts.

Keeping a Canary.

Amanda A. L. We never kept canaries or other birds, partly because we don't like to see them confined, though canaries know no other life, and the cage is their world, but mainly because we never had time to give them the proper care. We recently saw in an English journal called "Little Folks," a long talk about canaries, of which we quote the part which tells about the care of them: "If you buy a canary, do not choose one that has long and strong claws, or blackish rough scales on them, because it will be an old bird, and not likely to sing for long. The German canaries are considered the best singers; and the German bird-fanciers bestow great attention and do their best to teach them to sing sweetly. They take them from their nests, and let them hear nightingales and larks, which they will imitate most sweetly. When your pet is moulting, which is usually in July or August, keep it warm and give it a little hemp-seed, bread and milk, and lettuce or endive; but at other times it is better not to give it sweets and cakes, or extras of any kind, as some children do; they will make it ill. Canaries will live from ten to twenty years if properly looked after, kept clean, fed regularly, and hung in dry, warm places. They will for long repay with the sweetest song all the care that you can bestow on them. Canaries know nothing of liberty, and would only starve if we set them free; but you should remember always to take proper care of the helpless little birds. I will give you a few hints how to keep the canary in health. To begin with its food, which should be simply canary-seed mixed with about one-fourth of rape-seed, give occasionally a slice of sweet apple or a little bit of boiled carrot by way of a treat, fresh chickweed, groundsel, or watercress; and above all give it plenty of clean water; canaries are such bath-loving little birds. In their native wild state they are always flitting in and out of water, and it is cruel to deprive them of such a wholesome pleasure; and when they are moulting do not forget to leave an iron nail in their bath. Be also very particular about keeping the cage clean, with plenty of fine sharp sand in it. Do not leave it in a cold room in winter-time, and above all do not hang your pet's cage by a draughty window, for there is nothing more likely to make them sickly and ill. Canaries are such tender, warmth-loving little birds, that they soon cease singing, and die, if these simple directions be not well attended to. A japanned or a plain tinned cage is the best and easiest to clean; the common colored cages are dangerous, as the birds are apt to pick off the paint, and kill themselves.

Brightening all it Can.

The day had been dark and gloomy, when, suddenly, towards night, the clouds broke, and the sun's rays streamed through, shedding a flood of golden light upon the whole country. A sweet voice at the window cried out in joyful tones: "Look! O, look! papa, the sun's *brightening* all it can."—"Brightening all it can? so it is," answered papa, "and you can be like the sun, if you choose."—"How, papa? tell me how."—"By looking happy, and smiling on us all day, and never letting any tearful rain come into the blue of those eyes; only be happy and good; that is all."—*Brit. Juv.*

The Doctor's Talks—About Various Matters.

I have usually talked to the boys and girls about some particular thing, but now there are several matters that I wish to say a word about, and I will put them all into one "talk." Two girls write that they were disappointed in seeing nothing in the October No. about autumn leaves. There are several reasons why I did not say anything about the leaves last month. The girls may have heard the story of the man who had 16 reasons for not riding to meeting. First, he had no horse, and no one was curious enough to know about the remaining 15. I might give as a reason for having no leaf talk that I was several hundred miles towards sun-down, and was for the first time in many years away when the paper went to press. I say I might give this as a reason, but the real one was, that I did not intend to talk about

AUTUMN LEAVES in October. I supposed sufficient directions for drying were given in September, and that you would not care to make them up before the collecting season was over, and there was a good lot on hand nicely dried. The beauty of the leaves depends upon their having dried quickly; I gave in September the usual way of drying, but I wish I had added that a warm flat-iron may be used to advantage, especially if the weather is damp. To give the leaves a bright surface, and to bring out their colors, the old way was to give them a coating of raw linseed oil. I last winter hit upon what seems to me a much better way, which is to

DIP THE LEAVES IN MELTED PARAFFINE.—Perhaps you do not know what *paraffine* is, and to save you the trouble of asking, will say that in appearance it is something between white wax and spermaceti; it is quite hard and solid when cold, but melts very readily at a much less heat than that at which water boils. This among other interesting substances, comes from that wonderful natural product, petroleum, which you know also gives us the useful lighting oil, kerosine. After the leaves are dry, you can then give them a most beautiful polish by dipping them in paraffine. In order to avoid getting the paraffine too hot and frying your leaves, you must use what the chemists call a water-bath; put your tin cup, or whatever dish holds the paraffine, into a sauce-pan or other dish containing water, and place the two, one within the other, upon the stove; the paraffine will soon melt, and so long as there is water in the outer dish, it cannot get hotter than the boiling point of water, or 212°. If the bottom of the inner dish sits directly upon the bottom of the outer one, there may be some bumping from the escape of steam; to prevent this, set your paraffine dish upon a chip or two, a few nails, or anything to prevent the two dishes from touching one another. Now, having your dried leaves, your melted paraffine, a lot of old newspapers, and some soft rags, you are ready to

GO TO WORK.—Take the leaves one at a time by their stalks, put each carefully into the melted paraffine, let it remain there for a few seconds, lift it out, and allow what paraffine will drop off, to fall back into the dish;

PART OF LAMP-SHADE.

now lay the leaf upon one of the newspapers, folded to make a sort of cushion, and with a soft rag wipe off all the paraffine that you can from both sides. This will leave the leaf with a beautiful polish, and it may be again put back into the book from which you took it. Paraffine may be had at most of the drug stores, and in cities the better grocery stores have candles made of par-

affine. I have recently seen directions published for the use of wax in the same manner. Of course

In Making up Leaves thus covered with paraffine, you cannot use paste or gum, but they must be sewed on, or as Aunt Sue, who has something to say in her "Chats" about such matters, suggests they may be put on by pins. The making-up part I did not intend to give directions about, as that is a matter in which there may be great variety, and each one can exercise her or his own fancy. Very beautiful wreaths may be made by fastening the leaves to a piece of clean white card-board, or they may be made up in the form of a bouquet, using the white card-board as a back-ground. I have seen very handsome lamp-shades made with six pieces, each shaped like that in the engraving, attached to a wire frame, and each piece with a small cluster of the leaves tastefully arranged upon it. For this work those leaves should be selected which look best when held so that the light shines through them. Delicate dried ferns make up very prettily with the colored leaves. I did not try how they would look if treated with paraffine, but when you are doing the leaves you can experiment.

As I have said that I was away, I must tell you

About my Journey.—I had to go directly west nearly 1,000 miles, and a long ride it seemed. Every day that I go to the city I have two hours of railroad, and that is enough, but for three days—almost, that was not desirable. How do you suppose I amused myself while on the road? By looking at my boys and girls. By good fortune my Pullman car was the last of the train, and I could sit at the end of it and have a grand view of what was to be seen. Sometimes the scenery was fine, sometimes dull, but all along the road I saw boys and girls, and when they were particularly bright-looking, I said to myself, "There are some *Agriculturist* youngsters." I think that many a boy and girl in Western New York, Canada, Michigan, Illinois, and Wisconsin, who reads this will recollect that they had a bow from "The Doctor." When I saw the boys and girls with their kettles on the way to school, I bowed and waved my hand, and when I saw those little fellows picking up potatoes, or whatever they were doing, I found some way of giving them a greeting. But the greatest fun was, at a place in Southern Michigan, where the railroad ran close along side of the country road. There were two of the brightest of boys with a white horse in an old-fashioned sulky. The train was running very slow, and as we overtook them I had a bow from them. I signaled them to come on, and they started up the old horse; he made very good time, but it was of no use; oats against steam. When they found they were beaten, they both waved their straw hats and set up such a laugh as could only come from light-hearted youngsters. I am quite sure they were two of our boys, and when they see this they will remember the laugh, and know who laughed with them. As I could not read much in the cars, I made the time pass pleasantly by looking out for our boys and girls, and if all those I saw and had a hurried greeting with, did not belong to our family, why they ought to. They made my journey a pleasant one, and I thank them all, just for this hurried glimpse of them.

Now, youngsters, both of you, boys and girls, I wish to have a little serious talk with you. I have sometimes tried to amuse you, and sometimes to instruct you, about natural objects, but this is about neither, but about something which ought to be said. Perhaps some youngster about 16, (sometimes boys feel older then than they ever do after,) will turn up his nose and say,

"Oh the Doctor is on a Preach."—Now, you are just the boy I wish to have a word with, and if the boys and girls will give attention to my "preach" this time, I will try and have something more to their fancy another month. The subject is

Slang and Catch-words.—Last month something was said to the boys about the use of slang names for "father," now let us have for both boys and girls a little talk about slang words in general. Slang is described as the language of the "vile and low," but I do not mean to say that boys and girls are vile and low when they use slang words, and yet I do not know exactly what word to use in its place. A boy may call a policeman a "cop," and speak of money as "dibs," "blunt," and "stamps," or a girl may think ice-cream "goloptions," and regard a dress as "tippybob," and both be very excellent children, for they use low language without any thought. They have heard others use the words, and they seemed so new and odd that they followed the bad example. I once knew a very estimable young lady, the daughter of a family noted for its refinement, who having heard a few slang words, took a great fancy for them, and was what may be called slang crazy; all that she saw in the newspapers, and all that she could pick up, she used in her conversation, when her parents were not near; she had so great a fancy for such words that she begged all the young gentlemen in the large circle of her acquaintance to bring her new ones, and when one brought her a new bit of slang, she was as much delighted as other girls would be with the present of a bouquet. We are sorry to say that some of her acquaintances taught her words not proper to use, and it was very sad to hear this young person bring into her conversation words which are never used by decent people, but which can only be heard among the low and vulgar. It was of course done innocently, and without any idea that there was an improper meaning to the words. At last some friend was kind enough to tell her of the true character of some of the slang, and she had the good sense to drop everything of the kind. Not only are slang words entirely useless, but they often have a low origin, and are among low people used in a sense which would shock any decent boy or girl did they know what it was. The boys and girls who read the *American Agriculturist*, when they hear a new word, the meaning of which they do not know, had better not use it until they have looked it up. The English language is a very rich one, and there is a great abundance of words that properly belong to it, without going into the slums to find new ones. Many of the slang phrases have a wretchedly low origin, and some of the words are only concealed profanity.

Besides slang, or unusual words, there are "catch-words." I call them so for want of a better name. I mean those words which persons habitually use, almost without knowing it. Some persons cannot tell the simplest story, or give an account of what has happened, without putting in "you know," every five or ten words; others in the same manner say "and-er," "an-der-er," at the same time taking a long breath, while others use "Well-er," or "But-er," in the same way, all seeming to think it necessary to keep up a sound while they are getting ready to say something else. If you are in the habit of using words like these, get some good friend to correct you, for there is nothing that makes a person's conversation more tedious than these tricks of speech.

One of the amusing things in the use of language is the way in which many express surprise. We know several whom we can tell beforehand what they will say when told of any piece of news. One will be sure to tell you, "You don't say so!" Another, "I want to know!" and another, "how you talk." Now these are really very impolite, for you have said so, and they really don't "want to know," as you have just told them, and you probably "talk" in a very sensible manner. Still more unmeaning are the very common, "Well I never!" "Now I shall give up!" "For the land's sake,' and others. "Luddy massy on us" is sometimes heard, but would not be did those who use it know that it is a corruption of the very solemn "The Lord have mercy on us." It is very natural to express surprise when told any astonishing piece of news, but it is not necessary to have always the same way of doing it. "Astonishing!" "you surprise me!" "I never suspected that," are good English, and just as useful as any of the set phrases, some of which we have quoted. If these catch-words and set phrases are avoided while you are young, you will not be likely to fall into the use of them when older. "Would you have youngsters talk like school-masters?" some of you may ask. No; I would have children be children, and there is not the least difficulty in having children talk with proper freedom without falling into the use of slang or any of the tricks of speech here noted. Every one of you, no matter what your present lot in life, or what your future occupation may be, hopes, or should hope, to be a useful, cultured, and respected man or woman, capable of filling any place in the community in which you may live. By place, we do not mean merely office, for the least worthy often get that, but what is more important, that of a good citizen and a good neighbor. Perhaps you do not now think that before long you will be in the places now occupied by your fathers and mothers; it is only the matter of a few years. Of course there are things more important than matters of speech, and many men and women are respected and beloved in spite of their unpleasant ways, because they are warm-hearted, kind, and helpful; but these very persons would be more useful and more welcome in the families of their friends, did they use a simple language. If these unpleasant ways have been learned, break them up at once. In a family it will be a good plan to establish a small fine, to be paid by whoever uses a word that is not good English, or any of the needless catch-words or phrases, the fines to go to the Sunday-school or some neighborhood charity. Now, boys and girls, let us all try to stop by some means this use of slang.

Aunt Sue's Chats.

Mary J. Y.—I couldn't possibly tell you whether it is a fact "that hunters are killing all the buffaloes!" without knowing how many buffaloes there are. I can tell you how many it is estimated are killed yearly, and you may draw your own conclusions. The "hide-hunters" of Texas, Kansas, southern Nebraska and Colorado, kill 50,000 each year for their skins alone. The Indians are said to kill three times that number, and sportsmen and pioneers, who depend on buffalo meat for their food, kill perhaps 10,000 more. That is about 210,000 a year; and it certainly can't take long to kill them "all" at that rate!

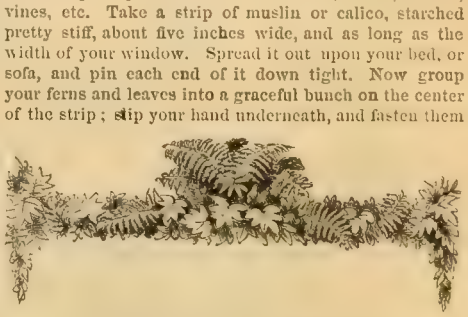
F. G. M. says, "Please tell me why people say 'he has cut stick' when a person has run away." Advertisements for fugitive slaves were marked by a wood-cut representing a negro running, with a stick and bundle across his shoulders. Even now you will see that cut heading advertisements for negroes who have run away from contract labor. They cut their sticks preparatory to running off.

George H. F.—Thanks for your letter. The cross-word is very nicely printed.

Ned.—Your questions are not of sufficient general interest to warrant my taking up the space necessary for replies.

Patsy.—Enigmas made upon the names of the writers, or of their own personal friends, or upon the title of our paper, its editors or publishers, are the least likely of any to get into print.

Kate M. enumerates many articles made of, or rather ornamented with, fall leaves, and wants to know if I will tell her of something else. Yes, Katie; if you have the time and patience, you can make very beautiful cornices for the tops of your windows with ferns, leaves, berries, vines, etc. Take a strip of muslin or calico, starched pretty stiff, about five inches wide, and as long as the width of your window. Spread it out upon your bed, or sofa, and pin each end of it down tight. Now group your ferns and leaves into a graceful bunch on the center of the strip; slip your hand underneath, and fasten them



CORNICE OF LEAVES, FERNS, ETC.

to the muslin with small pins; be careful that all the pins are hidden by the leaves. Pins are better than needle and thread, as the thread is liable to catch on the leaves and break them. The engraving may assist you in arranging the leaves and ferns. Of course they must be pressed and dried before using. With care they will last a year or more. When the strip is finished, it may be pinned to the curtain. The effect is very pleasing.

Aunt Sue's Puzzle-Box.

NUMERICAL ENIGMA.

I am composed of 11 letters:
My 10, 2, 3, may preserve fruit, but it hurts fingers.
My 6, 4, 2, 11, is a most unpleasant emotion.
My 9, 7, 5, 8, is often delicious, sometimes flat and unprofitable.
My 1, 7, 3, is a boy's nickname.
My whole is the name of a man who became rather suddenly famous. Vau.

CROSS WORD.

My first is in John but not in Mark,
My next is in branch but not in limb,
My third is in finch but not in lark,
My fourth is in freak but not in whim,
My fifth is in dark but not in light,
My sixth is in talk but not in word,
My seventh is in wrong but not in right,
My whole you will find is the name of a bird.
Herbert J. K.

DECAPITATION.

I only boast of letters five,
And for brief moments only live,
Beheaded, a life-sustaining food,
In tropic climes accounted good,
Behead again and in me see
What gives their drink its luxury. Tempy.

ANAGRAMS.

Names of noted persons.
1. Mail train. 3. Rich sell.
2. Turn the rail, M. 4. Faint, alone. Barbara.

PUZZLE.

(Make sense of the following letters.)

N A S E D E
D O K C A N
M F J A R O
A A L L T N
S T E R O F Herbert J. K.

DOUBLE ACROSTIC.

The initials and finals give the names of two flowers.
1. A young animal. 2. A plant used in soup. 3. Something used by sportsmen. 4. Pathetic. 5. Once a year.
Geo. M. Clark.

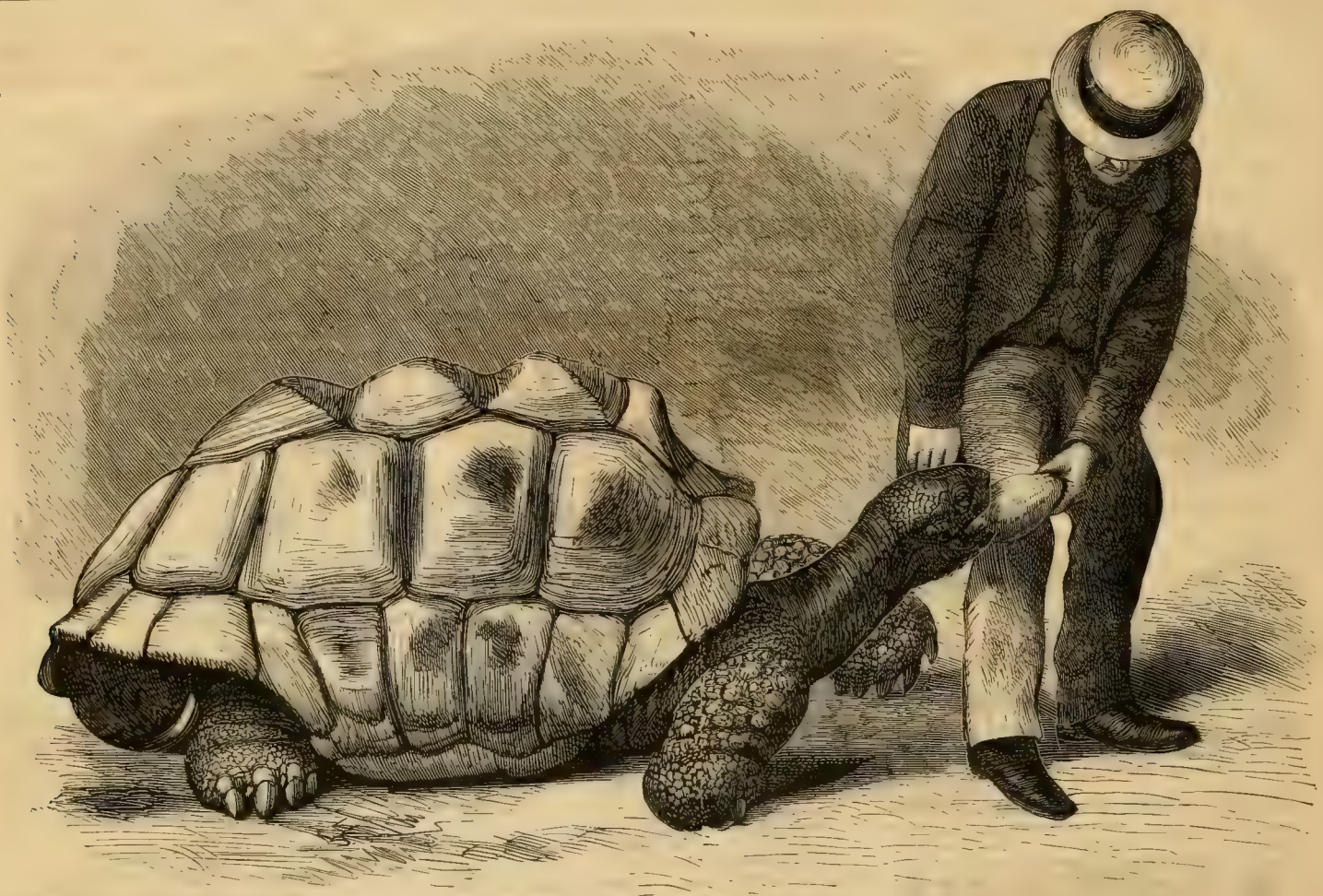
EQUIVOCAL WORDS.

1. A tool—an insect. 2. Part of a bird—Papa's dread—a sort of hook. 3. A fragment—a tool—part of harness. 4. Part of a tool—a spear of grass—a jolly fellow. 5. A gust—a hit—to puff—to blossom—a great grief. 6. A melody—our inhalations. Bessie.

DROP LETTER PUZZLE.

(A proverb.)

T m a d i c a t o n m n. Vau.



THE GREAT LAND TORTOISE FROM THE ALDABRA ISLANDS.

SQUARE WORD.

1. Expired. 2. A pain. 3. To avoid. 4. A pavilion.
P. INK AND CAP I TAL.

TRANSPOSITIONS.

(Fill the blanks with the same words transposed.)

1. The horse in the —— wagon was very——, and when hitched with his —— made a very good ——.
2. The old —— —— some ——.
3. He went to the —— in his bare ——.
4. Do not —— so over that ——.
5. —— friend how —— you —— that book? M. P.

HIDDEN SOUTHERN CITIES.

1. It is in general eight o'clock before I get home. 2. In an instant, Onisrum grasped him. 3. As tall,—ah! as seen in his picture, is he? 4. A box of steel pens, a colander, and other things are in that bundle. 5. Oh! Jack, (so neighbor Field says) your dog is dead! 6. Hurra! "U. S. tin cup maker." Ha! ha! GEO. H. F.

PI.

Ew hears rou tumalu owes,
Rou tumlua rubneds rabe,
Dan entof rof chea hoter fowls
Eth aspmithginzy rate. LITTLE ONE.

DIAMOND PUZZLE.

1. vowel. 2. A vessel. 3. A city. 4. A girl. 5. Figures. 6. Consumed. 7. A vowel.—The central letters, horizontal and perpendicular, form a city. NIP.

ANSWERS TO PUZZLES IN THE SEPTEMBER NUMBER.

NUMERICAL ENIGMAS.—1. Charles Dickens. 2. Where no oxen are, the crib is clean.

CONCEALED BOOKS OF THE BIBLE.—1. Kings. 2. Hosea. 3. Esther. 4. Amos. 5. James. 6. Acts. 7. Luke. 8. Matthew. 9. Romans.

CHARADES.—1. Alfred. 2. Novelties.

ANAGRAMS.—1. Subscribers. 2. Misunders'ood. 3 Distinguishable. 4. Foretaste. 5. Overmastered. 6. Recurrences. 7. Intolerable. 8. Reverberations. 9. Rhythmical. 10. Sentimental.

PLANTINGS.—1. Cabbage. 2. Sunflower. 3. Hollyhock. 4. Cowslip. 5. Pond Lily. 6. China Aster. 7. Morning-glory. 8. Tobacco.

TRANSPOSITIONS.—1. Wolf, fowl, owl. 2. Monarch, march-on.

PUZZLE.—B-O-L-T.

CROSS WORD.—The vowels—a, e, i, o, and u.

DOUBLE ACROSTIC.—A—lonz—O Alpha and Omega.
L— oo —M
P— oi —E
H— an —G
A— s —A

PI.—People count up the faults of those who keep them waiting.

Send communications intended for Aunt Sue to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Biggest Land Tortoise.

Those who recollect the picture given in August last, called "More Frightened than Hurt," will notice that we there called an animal a turtle which, though smaller, was much like the one we here call a tortoise, and will perhaps wonder why we use two different names for things so much alike. To save you the trouble of asking, we will, before we describe the big fellow in the engraving, explain how this happens. The animals were originally called tortoises, probably from the Spanish word for them, *tortugas*; they are first so named in a book printed in 1555; about 50 years later, a Captain Goswold made a visit to New England, and in the account of the voyage, it is said that they caught "crabs, lobsters, and turtles." In 1673 a writer on New England says that turtle and turkle were in common use for all kinds of tortoises. The name turtle properly belongs to a dove, and when we read in the Scriptures, "The voice of the turtle is heard in our land," it refers to the dove, and not to these hard-shelled reptiles. No one knows why these early sailors came to apply the name of the turtle, the bird that had long been regarded as the emblem of affection, to such an entirely different creature as a tortoise, unless they did it as a sort of a joke; we sometimes see a person name an especially ugly dog "Beauty," and boys are very apt to call a very large and overgrown schoolmate "Infant," and perhaps they thought it funny to call a great clumsy creature after something that was entirely its opposite. However it may be, the name turtle is now in general use; in England it is given to those tortoises only which live in the sea, but in this country it is more in use for both the land and sea animals than tortoise. It would be much better if we used turtle for the sea animals only, but it is not easy to make changes in a language. So when we the other day called the little fellow a turtle, we gave it the name by which most people call it. Now as to the tortoise in the picture; isn't it a monster? You can readily judge of its size by comparing it with the man. There may have been larger sea-turtles, but this is the largest land-tortoise known. The engraving is from a portrait published in the London Field, of this remarkable animal, which has at last found a home at the Zoölogical Gardens, London, England. These gardens you must know are an immense menagerie, where there are large grounds and buildings for the finest collection of animals in the world. This tortoise and its smaller mate came from the Aldabra Islands, a small group about 180 miles north-west of Madagascar, where the animals were formerly very abundant, but are now scarce, many having been killed or carried off by whalers, who frequently land there for wood. This particular one was taken from his native island over 70 years ago, and carried to the Seychelles, (see Atlas or Gazetteer), where he was owned for all this time by one family, and being the largest of its kind living, the people were very proud of him. He was kept with his mate in an enclosure; the female laid about 40 eggs twice a year, and the young hatched in about 10 weeks. The "chicken-tortoises" were kept until about four years old, and then used for food. It was with difficulty that the owner could be got to part with the pair. This animal, the male, measures over the curve of the shell, 5 feet 5 in. in length, and 5 feet 9 in. wide; his head and neck are 1 ft. and 9 in. long; he weighs 870 pounds, and has not yet got his growth! These tortoises live upon vegetables of all kinds, and eat grass freely; the man in the picture is giving it a vegetable marrow, a kind of squash used in England, where they can raise no better ones; an abundance of water must be provided for the animals to drink; their native country is a very warm one, the thermometer never going below 70°, so these will have to be carefully housed. As tough as they look, they are easily injured by cold; it is said that 24 hours at a temperature as low as 50°, will kill them. There was one of these turtles a few years ago at Central Park, and though not so large as this by a great deal, it would easily walk off with a man on its back; it found one of our cold winters too much for it, and one spring it did not wake up from its winter's sleep. It is estimated that this one in the engraving would be able to carry a ton, if the shell were strong enough; he is a terribly strong fellow, and can break a 2-inch bar of iron as if it were a reed, if he can only find a solid place against which to brace his feet. On shipboard the male and female were put in separate cages, but the old chap was inclined to be sociable, and tried to break out, by raising himself upon his hind legs and pressing against the roof of his cage; he would have succeeded, had not the gentleman having him in charge put a stop to his fun. How do you suppose it was done?—very simply. He only greased the inside of the cage, which made it so slippery that the tortoise could not raise up on end any more. The animal is very tame, will feed out of the hand, and likes much to have his head and neck rubbed, and stretches them out of the shell as far as possible, to be stroked. These tortoises are very quite and gentle, and, it is said, never bite.

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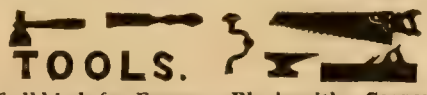

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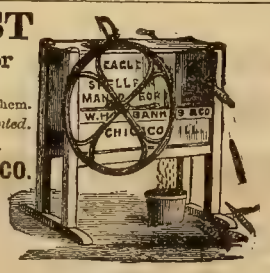

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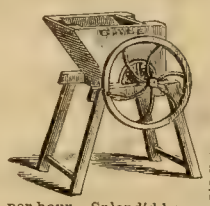

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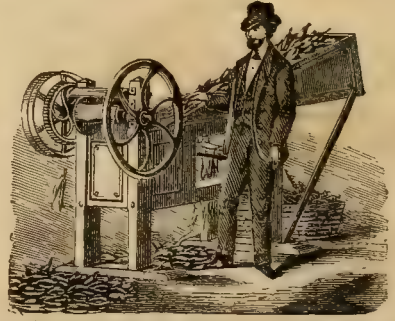

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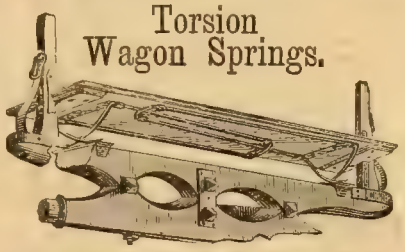

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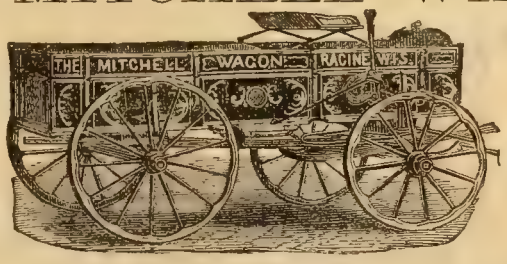

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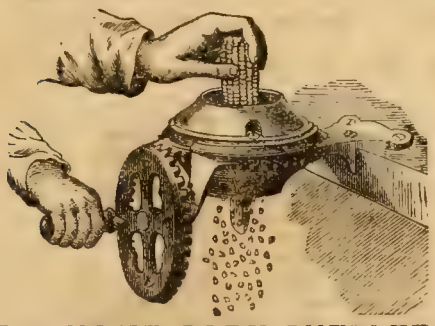

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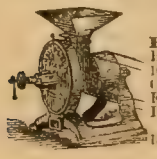

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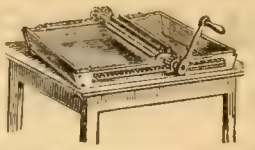

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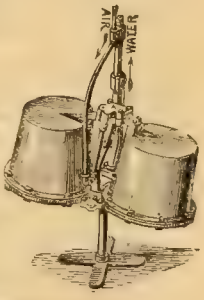

Water driven to any height and distance by *compressed air.* Country houses supplied cheaply and certainly for bath-rooms, water closets, hot and cold water faucets, etc.

Plenty of fresh water for stock on farms. Address

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EVERY FARMER HIS OWN MILLER.

BOYER FARM MILL.

Simple, Durable, Efficient.

Grinds any kind of Grain, also

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BLAKE'S PATENT

Stone and Ore Breaker

Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c.

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PERFECTLY Self-Regulating. The Best, Cheapest, most Durable and Popular Mill made. Manufactured under the immediate supervision of Inventor 21 years. Two and a half million dollars' worth now in use.

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Grinds all kinds of grain rapidly. Is simple, durable, and cheap. Is suited to all kinds of horse-powers. Every Farmer should have it.

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will thrive in the shade? Which on a light sandy soil? What varieties from the garden will furnish winter bloom in the house? and much else of interest to lovers of flowers in Root's Garden Manual. See adv. page 434.

The Best Breech-Loading Rifle in the World.

REMINGTON CREEDMOOR RIFLE.

Price List of Remingtons' Breech-Loading Rifles, Cartridges, &c.

Sporting, Hunting, and Target Rifles.

STEEL BARRELS.

Weight of No. 1 Rifle, from 8½ to 15 pounds.
Weight of No. 2 Rifle, from 5½ to 8 pounds.

Length of Barrels	24, 26 in.,	28 in.,	30 in.,	32 in.,	34 in.,
Price	$32.00,	$34.00,	$36.00,	$38.00,	$40.00.

EXTRAS.

Peep and Globe Sights, per set	$5.00	Swivel and Sling	$2.00
Set Triggers	2.50	Re-loading Implements, per set	5.00
Varnished Stocks, selected	4.00	Rifles of $^{22}/_{100}$ caliber	2.00
Oiled and Polished Stocks, selected	4.00		

CREEDMOOR RIFLE, Vernier Rear and Wind-Gauge Front Sight. Pistol Grip, chambered for solid head Cartridges $100.00

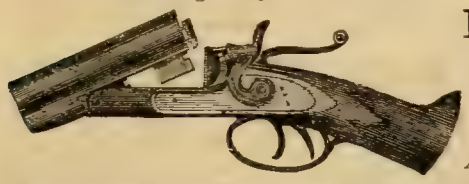
Spirit Level for front sight, extra	$ 5.00
Sight Discs for front sight, extra, each	1.50
Shells, per 100	2.50
Swedged Bullets, per 100	1.50
Vernier Sights, separate from the gun, Creedmoor pattern	16.00
Wind Gauge Sights, separate from the gun, Creedmoor pattern	4.00
Primers, (per box, 250)	50
Ball Seater	1.25
Primer Extractor	1.25

CARTRIDGES FOR SPORTING RIFLES.

Sizes	22, long,	32, long,	38, long,	44, long,	46, long	Rim Fire, per 1000.
Weight of Ball	29 grs.,	91 grs.,	148 grs.,	222 grs.,	336 grs.	
Weight of Powder.	5 grs.,	13 grs.,	18 grs.,	28 grs.,	35 grs.	
Sizes	40,	44,	44 Creedm'r,	45,	50,	Center Fire per 1000.
Weight of Ball	315 grs.,	400 grs.,	550 grs.,	300 grs.,	450 grs.	
Weight of Powder.	50 grs.,	77 grs.,	90 grs.,	45 grs.,	70 grs.	

CASES FOR RIFLES.

Black Walnut, lined, each	$7.00 to $15.00	Bag Leather, Flexible, gun shape	$3.00
Mahogany, " "	7.00 to 20.00	Sheepskin, " "	2.00
Rosewood, " "	20.00 to 40.00	Canvass, " "	2.50
Russett Leather, (stiff,) trunk shape	15.00	Cartridge Belts	5.00
" " " gun shape	5.00	Cartridge Box and Belt	1.25



Double-Barreled Breech-loading Shot-Gun.

Whitmore's Patents.
August 8, 1871. *April* 16, 1872.

In order to suit the requirements of our different customers, we make three styles of gun, differing *only in the finish and kind of barrels and stocks*, which we offer at the following prices.

Plain Walnut Stock, Decarbonized Steel Barrel	$45.00
Extra " " Twist Steel Barrel	60.00
Extra " " " " Engraved Sock Plate and Breech Frame	75.00
Extra Pairs of Barrels, fitted to same Breech	$20 to 40.00
Double Gun, one Barrel Rifle and one Shot, Decarbonized Steel Barrels	65.00

Lenght of barrels, 28, 30 inches. Bore, 10 or 12 guage. Weight, 8 to 9 ℔s.

BREECH-LOADING SHELLS.

Remington Metal, per doz	$2.00	Paper Shells, 2d quality, No. 10, ℔ 100	$2.25
Paper Shells, 1st quality, No. 10, ℔ 100	2.50	Paper Shells, 2d quality, No. 12, ℔ 100	1.75
Paper Shells, 1st quality, No. 12, ℔ 100	2.25	Paper Shells, 3d quality, No. 10, ℔ 100	1.50
		Paper Shells, 3d quality, No. 12, ℔ 100	1.25

PRIMERS.

Remington, per box, 250 ..... 50 cts. For Paper Shells, per box, 250 ..... 75 cts.

WADS.

Paper, per box ..... 25 cts. Felt, per box ..... 35 cts.
Eley's Best, per box ..... 63 cts.

Mohawk Valley Patent Clipper Steel Plows.

WOOD OR IRON BEAM. ALL STEEL, AND OUR IMPROVED COMBINATION HARD MOLD-BOARDS.	STEEL POINTS. Plain.	With Clevis.	Wheel and Clevis.	Clevis Wheel and Colter.	CAST POINTS. Plain.	With Clevis.	Wheel and Clevis.	Clevis Wheel and Colter.
No. C, 3.	$22.00	$23.00	$24.00	$26.00	$20.00	$21.00	$22.00	$24.00
" A, 1	19.00	20.00	21.00	23.00	17.00	18.00	19.00	21.00
" C, 1	19.00	20.00	21.00	23.00	17.00	18.00	19.00	21.00
" A, 16	19.00	20.00	21.00	23.00	17.00	18.00	19.00	21.00
" C, O2	18.00	19.00	20.00	22.00	16.00	17.00	18.00	20.00
" C, 11	16.00	17.00	18.00	20.00	14.00	15.00	16.00	18.00
" C, 10½		13.50				12.50		
" C, O6		11.00				10.00		
" 9 Cast Mold Board					9.00	10.00	11.00	13.00
" 14	16.50	17.50	18.50	20.50	15.00	16.00	17.00	19.00
" 14 for deep plowing	18.50	19.50	20.50	22.50	17.00	18.00	19.00	21.00
" 14½ all iron.					12.00	13.00	14.00	16.00
With Sub-soil Attachments.								
Nos. A, 1 & C, 1	25.50	26.50	27.50	29.50	23.50	24.50	25.50	27.50
Michigan Double Plows.								
Nos. A, 1 & C, 1	25.00	26.00	27.00	29.00	23.00	24.00	25.00	27.00
Small Jointer Plow—Cast								$ 4.00
Large Jointer Plow—Steel								6.00

Steel Shovel Plows, $6.50 to $7.50 each. One and Two-horse Cultivators, $9 to $16.50 each. Cast Steel Hoes, in great variety, from $5 to $13 per dozen. Cast Steel Garden Rakes, $8 to $12 per doz. Malleable Iron Rakes, $5.50 to $6.50 per doz.

Superior "Lowman Patent" Solid Cast-Steel Shovels of various sizes and patterns. Send for price list.

Breech-Loading Military Fire-Arms.

(*About* **1,000,000** *Arms of this System now in the hands of Troops.*)

	Without Bayonet.	With Bayonet.
U. S. Model. Cal. .50. Angular Bayonet. Length of Barrel, 32.5 in. Weight without Bayonet, 9 ℔s., 1 oz. U. S. Cartridge. Length of Gun, 47.5 in. Weight with Bayonet, 9 ℔s., 15 oz.	$16 50	$18 50
Springfield Transformed. Cal. .58. Angular Bayonet. Length of Barrel, 39 in. Weight without Bayonet, 9 ℔s., 11 oz. Length of Gun, 54.75 in. Weight with Bayonet, 10 ℔s., 9 oz.	$13 00	$15 00
Springfield Transformed. Cal. .58. (Short Model). Angular Bayonet. Length of Barrel, 36 in. Weight without Bayonet, 9 ℔s., 8 oz. Length of Gun, 51.75 in. Weight with Bayonet, 10 ℔s., 6 oz.	$13 00	$15 00
Spanish Model. Cal. .433 in. (or 11mm.). Angular Bayonet. Length of Barrel, 35.2 in. Weight without Bayonet, 9 ℔s., 4 oz. Spanish or Russian Cartridge. Length of Gun, 50.2 in. Weight with Bayonet, 10 ℔s., 2 oz.	$16 50	$18 50
Civil Guard. Cal. .433 in. (or 11mm.). Sabre Bayonet. Length of Barrel, 30.35 in. Weight without Bayonet, 8 ℔s., 10 oz. Spanish or Russian Cartridge. Length of Gun, 45.35 in. Weight with Sabre Bayonet, 10 ℔s., 4 oz.	$17 00	$20 50
French Model. Cal. .433 in. (or 11mm.). Sabre Bayonet. Length of Barrel, 35.2 in. Weight without Bayonet, 9 ℔s., 4 oz. Egyptian Cartridge. Length of Gun, 50.2 in. Weight with Sabre Bayonet, 10 ℔s., 14 oz.	$17 00	$20 50
Carbine. Cal. .50, or Cal. .433. Length of Barrel, 20.5 in. Weight of Carbine, 7 ℔s. Length of Carbine, 35.5 in.	$16 00	
Single Shot, Navy Pistol. Cal. .50. Same principle of Remington Breech-loading Rifle. Model of 1870. Length of Barrel, 8 in. Weight of Pistol, 2 ℔s.	$10 00	
Six Shot Army Revolver. Cal. .44. Remodeled, using metallic cartridge rim fire. Length of Barrel, 8 in. Weight, 2 ℔s., 14 oz.	$12 50	
Six Shot Navy Revolver. Cal. .36. Remodeled, using metallic cartridge rim fire. Length, 7½ in. Weight, 2 ℔s., 10 oz.	$12 00	

No. 3. Army Revolver. . . $15.00.

Loaded and Cartridge ejected without removing cylinder.

New Model 1875. Center fire metallic Cartridge. Cal. .44.

(10,000 now being made for a foreign government.)

CARTRIDGES.

	Weight of Powder.	Weight of Bullet.	Price per Thousand. With Patch.		
Egyptian	76 grains	395 grains	$39.00	$38.00	Center Fire.
Spanish	77 "	400 "			
Russian	77 "	370 "			
.58 Cal.	70 "	450 "	35.00		
.50 Cal.					
.50 Cal. Pistols	30 "	320 "	24.00		

Remingtons' Celebrated Steel, Iron and Stubs Twisted Rifle and Shot-Gun Barrels, and Gun Mountings.

STANDARD REMINGTON PISTOLS.

	Blue.	Plain Frame.	Full Plate.	Engraved. Extra.	Ivory Stock. Extra.	Pearl Stock. Extra.
Vest Pocket 22, Breech-Loader	$ 3.25		$ 3.75	$ 2.00	$ 5.00	$ 6.75
Vest Pocket 41, Breech-Loader	3.75	$ 4.25	4.75	2.00	4.00	6.00
S. B. Derringer, Breech-Loader, per pair	7.00	7.75	8.50	4.00	8.00	12.00
Repeater, five shot	8.00	8.50	9.00	4.00	4.00	6.00
Repeater, four shot	8.50	9.00	9.50	4.00	4.00	6.00
Repeater double barrel	8.00	8.50	9.00	4.00	4.00	6.00
Pocket, double action Revolver	8.00	8.50	9.00	4.00	5.00	9.00
New Pocket Revolver, 3½ inch	9.25	9.75	10.50	4.00	5.00	7.50
New Pocket Revolver, 4½ inch	9.50	10.00	10.75	4.00	5.00	7.50
Police Revolver, 3½ and 4½ inch	10.00	10.75	11.50	5.00	5.00	9.00
Police Revolver, 5½ inch	10.50	11.25	12.00	5.00	5.00	9.00
Police Revolver, 6½ inch	11.00	11.75	12.50	5.00	5.00	9.00

New Revolver—Best in the World.

Remingtons' No. 1 Pocket Revolver,

New Model, using No. 30 cartridge. Loaded and cartridge ejected without removing cylinder. Weight, 10 oz.—ALL STEEL, BARREL AND FRAME ONE SOLID PIECE. Price, full plate, $10.00.

RIFLE CANES ...**$10.00. Same with Ivory Head** ....**$15.00.**

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Plain Table, $60; same with Drop Leaf, $63.—Half Cabinet, $65; same with Drop Leaf, $68; same with D. L. and 2 Drawers, $70; with 3 Drawers, $73; with 2 Drawers each side, $75.—Three-Quarter Cabinet, D. L. and 4 Drawers, $85; same with Anatomical Treadle, $92. Full Cabinet, with Box or Folding Cover, $100.—Hemmer, Feller, Braider, and Gauge, FREE with each machine. Western prices $5 higher than the above. **INCREASE OF SALES** in 1873, 85½ per cent; in 1874, 90¾ per cent over preceding years. Sales thus far in 1875 indicate a still *larger increase*. No other Company has increased their sales in this country during the same time.

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N. B.

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7	*Child's Self-operating Swing (do. do.)*	$ 4 00	9	32
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10	*Crandall's Masquerade Blocks*	$ 1 00	3	....
11	*Crandall's* **Acrobats**	$ 1 00	3	....
12	*Crandall's* **Menagerie**	$ 2 00	5	20
13	*Utility Adj. Table (Lambie & Sargent)*	$ 8 00	16	52
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20	*Casters (do. do. do.)*	$ 9 00	17	54
21	*Cake Basket (do. do. do.)*	$12 00	19	65
22	*Revolving Butter Cooler (do. do.)*	$ 8 00	16	52
23	*One Dozen Teaspoons (do. do.)*	$ 6 00	15	45
24	*One Dozen Tablespoons (do. do.)*	$12 00	19	65
25	*One Dozen Table Forks (do. do.)*	$12 00	19	65
26	*Child's Cup (do. do.)*	$ 2 75	7	27
27	*Child's Knife, Fork & Spoon (do.)*	$ 5 00	12	37
28	*Moore's Floral Set (Moore Man'f'g Co)*	$ 1 00	3	....
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33	*Climax Apple Corer & Slicer (do.)*	$ 1 00	3	....
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35	*Knives and Forks (Patterson Bros.)*	$14 25	21	70
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41	*Pocket Knife (do. do.)*	$ 2 75	7	27
42	*Ladies' Pocket Knife (do. do.)*	$ 2 00	6	22
43	*Multum in Parvo Knife (do. do.)*	$ 3 50	8	30
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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 412.

Remedy for Barrenness.—"S. H.," Otie Creek, N. M., wants a remedy for barrenness in his hens and sow. He has tried balsam of copaiba, rosin, copperas, colombo, Peruvian bark, Cayenne pepper, and many other remedies for the sow, and has subsisted his hens upon grasshoppers, and all without avail. We can suggest nothing, unless it be the knife, or to feed these animals on some food with more nutriment in it than the above articles contain.

Use of Guano in the West.—"L. S.," Springfield, Mo. The use of guano can hardly be made profitable in ordinary farming in the western states. Much less can it be profitably used on good fresh land. The land may be kept in good order without this costly fertilizer, by a proper rotation of crops, and by growing clover, and by the use of what stable manure is made upon the farm. Ordinary prairie land ought to be kept profitably fertile in this way for a lifetime.

What to do with a Poor Cow.—"J. H. W.," Jefferson Co., Ky. Some Ayrshire cows are poor butter cows. There are two classes of this breed of cows, viz., butter makers and cheese makers. If you have one of the latter, it would be best to get rid of her if butter is expected. Her calf will probably inherit her character, and would hardly be worth raising. The tests of a butter yielding Ayrshire cow are, yellow colored, loose, mellow, soft, fine haired skin; a fine clear horn; very yellow color of the inside of the ears, and of the ear secretions; a fine head, face, and neck, a large milk vein, and a smooth, large, well made udder and teats. If the cow has a white hard skin, a hairy, coarse udder, coarse horns and head, although she may give much milk, she will rarely, if ever, be a good butter cow.

Feeding and Fodder.—"S. E. K.," Eastham. If meal is fed to cows with roots or other coarse fodder, it is well to feed it twice a day. There is not only the question of the nutriment in the food involved, but that of the completeness of the process of mastication and digestion. The cow's appetite is kept in good order if her feed is given regularly and without any change. Besides more coarse fodder is eaten when meal is mixed with it. An acre of corn-fodder may be made to yield 10 tons or more of dry feed, which is worth more than can be obtained from an acre of corn. The closer planting and heavier growth of the fodder, makes the difference in value.

As to Several Matters.—"J. E. De M.," St. Johns, N. B. Crude petroleum, when it is thoroughly absorbed by shingles, does not make them any more liable to take fire than they previously were. The volatile and most inflammable portion of the oil soon evaporates, leaving the paraffine and tarry residue only in the shingles... Spruce and pine timber yield about 2½ per cent of ash, which is only half that of oak and beech, and from one-sixth to one-tenth of that of walnut, hickory, and elm. The ash of pine and spruce is also very inferior in potash and phosphoric acid, containing but a tenth to a thirtieth as much as is found in the hard woods. Pine ashes are never used for soap-making, on account of their poverty in potash. Still where they can be secured very cheaply, they are worth their proportionate value, probably 5 cents a bushel....One reason why spruce trees which have been reserved from woods which have been cut down, wither and die, is the want of shade to which they have been accustomed. In some localities they are infested by a parasitical growth, which robs them of their sap, and gradually destroys them.

Keeping Manure in California.—"S. W. K.," Mendocino Co., Cal. The difficulty experienced in preventing manure from heating injuriously in a dry, rainless climate, may be avoided by carefully saving the liquids from the stable and drawing the fresh manure to a heap where it may be composted with waste matters and earth, using two or three parts of earth to one of manure. Or another and less troublesome plan, would be to keep the manure in a cellar or pit made with cemented walls as is described in the *American Agriculturist* of January, 1875. This method is used in Italy, and succeeds well in that dry climate. When the manure is too dry, water might be thrown upon it. Of course the liquids from the stable should flow into this pit.

Bee Notes.

BY L. C. ROOT, MOHAWK, N. Y.

Bees should now be in proper condition for winter quarters. It is surprising that some beekeepers still winter their bees out of doors. Circumstances may require out-door wintering; to prepare the bees for it, remove the honey-board, and place over the frames a piece of coarse canvas or sacking large enough to cover the entire top. Over this place a mat or quilt made of heavy unbleached cotton cloth and cotton batting. Each quilt should be of the exact size of the top of the frames, and contain about half a roll of cotton, and be tied in half a dozen places to keep the cotton in place. That the bees may be sure of a passage from comb to comb, lay a strip of wood ¼ inch square, and long enough to reach across all the frames, under the canvas on top of the frames. Fill the cap with straw and place it over the whole. Unless they stand in a sheltered place, they should be well protected from the wind.

I strongly advise in-door wintering in all cases where it is possible. We have practiced several different methods of protecting them out of doors, but find none wholly satisfactory, and have adopted in-door wintering entirely. Probably no one thing has embarrassed beekeepers so much as the general failure in wintering. While most agree that in-door quarters are preferable, there is much difference of opinion as to proper location and form of repository. Some build above ground, filling thick walls with sawdust or straw. Others build partly underground, covering entirely with earth. The principal objection to these different plans, is the absence of artificial heat.

We have bought bees quite extensively for the past few years, and in doing so have visited a large number of apiaries each spring. We found those that wintered best were kept directly under a room where there was a constant fire, or were otherwise aided by artificial heat. The following seems to me to meet the absolute necessities for in-door wintering, with least trouble and cost, and avoids the expense of extra fuel for the desired heat, and does not require any special excavation for the purpose. This location is a dry cellar directly under a room where a constant fire is kept; a proper and uniform temperature is indispensable to success. The room must be secure from the changes of the weather outside, either by heavy walls well banked, or by extra partitions and air spaces. I would advise a casing inside of the wall, leaving a space of two feet between it and the wall. To supply the bees with pure air, carry a trunk or tube made of boards, through a window down to, and around the bottom of the cellar, letting the air pass out through small holes in the sides of the tube, in different parts of the cellar. If the trunk could be passed for a distance underground before reaching the cellar, it would give the double benefit of being warmed in cold and cooled in warmer weather. For upward ventilation, pass a pipe through the floor above, directly back of the stove, and attach it to the stove-pipe as short a distance above the stove as possible. This will draw the impure air from the cellar, which will be replaced with pure air from the tube below, keeping all in a healthy condition.

The racks or shelves to set the bees upon, should not be attached to the sides of the room, to the floor, or above. To avoid all jarring from above, or from opening and shutting the door when entering the room, let them be made firmly, and rest only on solid ground at the bottom. Arrange the shelves so that the lower tier of hives will be at least two feet from the bottom of the cellar. A room 10 x 18 will hold 100 colonies. Arrange both lower and upper ventilators to open and close from without. The cold-air tube can be regulated outside the building. The upward ventilating pipe can have a shutter under the bottom, attached to a wire, passing up through a hole in the floor. Prepare bees for in-door

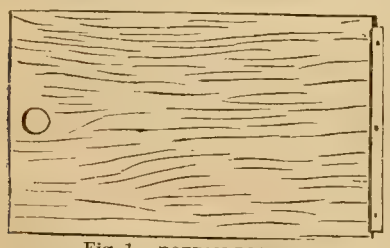

Fig. 1.—BOTTOM-BOARD.

wintering same as for out doors, except that the cap should be left off when carried in. If the Quinby hive is used, make an extra bottom board (fig. 1) 12 inches wide and 19 inches long, with a piece of hoop iron nailed across one end, projecting over ⅜ inch to hook the frames on, same as in the hive. In the other end make a 1¼-inch hole. Our method is, to remove the hive from the stand, and put an empty one in its place. In this, place the above described bottom board with the hole over the entrance. Then with an assistant remove the combs bodily from their hive and place upon this board. Tie a stout cord around frames and panels, place the quilt on top as already directed, and leave all in the hive until ready to remove to winter quarters, when bottom board and all, (fig. 2), can be lifted out and the hive left on the summer stand. Pursue this process

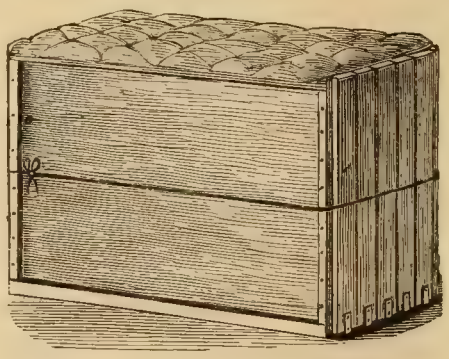

Fig. 2.—HIVE PREPARED FOR WINTERING.

until all are ready. The time when bees should be put into the cellar varies with the locality. In Central New York they are usually put away from the 1st to the middle of November. Great care should be taken to keep out rats and mice. Keep traps and poison between the walls, where they will find them before getting into the bee-cellar. There is much difference of opinion as to the best temperature. Most writers advise 40° to 45°. Our experience indicates 48°. Thus, to sum up, the requisites for successful wintering are: a properly arranged cellar, bees in the desirable shape, suitable ventilation, proper and uniform temperature, total darkness, and *perfect quiet*. As evidence of its success, I last winter put 121 colonies in such a place, seldom visited them, ascertained the temperature frequently by means of a small thermometer attached to a string and dropped through a hole in the floor, and took out 120 stocks in the spring.

"Walks and Talks" Correspondence.

CLAWSON WHEAT.—"W. B. P.," Washington, Va., writes: "I want your opinion of the Clawson wheat, and if you think it will suit this state?"—*Ans.* The great merit of the Clawson is its hardiness. It is a *white* wheat, but not of the highest quality. The Diehl is no whiter than the Clawson, but the berries are rounder and plumper, and, I think, of a finer quality. If the Diehl would stand our winters, I should raise it in preference to the Clawson. In fact I am still raising it. The Clawson is a remarkably vigorous, strong growing, hardy variety, and will be very valuable in sections where the finer varieties can not be grown.

THE SOUTHERN PEA.—"G. W. C.," Southern Illinois, writes: "We have a pea introduced here from the south. I procured a few, and planted ¼ acre to try. They are yielding abundantly, and stand up (Sept. 12th) waist high. I am better pleased with them than any other crop on the farm. If you will pay expressage, I will send you half a bushel for trial, as I think I have got pay for them in Walks and Talks. They are said to fatten hogs equal to corn. One farmer who had his corn killed last year by Chinch Bug, planted 20 acres of these peas, and fattened his pork exclusively on them. I think you would like the crop. You could cut them with your reaper."—I do not think the southern pea would do well with me. It is a useful crop in the southern states, and one which could be grown there to a greater extent with profit, both for feed and manure. It is, or might be, the great renovating crop of the south.

DRAINING WITH BOARDS.—A. S. Tipton, Howard, Penn., has a farm in the lumber region, where boards or slabs are cheap. He digs his ditches in the usual way, within a few inches of the bottom. He then narrows them in, using, I presume, a narrow draining spade or long-handled scoop, and lays a plank or slab (*a*) to cover the drain, and then fills up with earth. He has never known one to fill up by the sides caving in. He says he has not seen this method described in the books. I think it is described in all the treatises on draining. It is a very old plan, and a very good one when there is a stiff clay sub-soil, and where the work is skillfully done.

SHEEP IN THE LUMBER REGIONS.—Mr. Tipton is clearing 25 acres where he has been cutting timber, for "I deplore," he writes, "the wholesale slaughter of the timber in this county, but if we would thin up the standing young trees, and clear the land and ditch the swamps, I think the country would be improved instead of impoverished."—What immense flocks of sheep and cattle the cut-off timber lands of these mountains would support, if cultivated in the available spots! I should think, at any rate, it would pay well to sow grass seed as soon as the timber is removed, and while the land is soft and the surface covered with organic matter.

WANTS TO LEARN FARMING.—A young man in Ohio, 18 years of age, writes to me that he wishes to be a farmer, and he wants to go where he can study and earn his board and clothes at the same time.—I get a great many similar letters, and would much like to help such young men. I would recommend him to go to an agricultural college, if possible; or to go to some good farmer *in his own neighborhood*.

DIFFERENT VARIETIES OF POTATOES.—"C. P. F.," Kent Co., Mich., writes: "I have *Extra Early Vermont* which is full as good as *Early Rose*, perhaps earlier. I discovered no difference when we commenced using them, but afterwards noticed that it died down when fully ripe about a week earlier than Early Rose. *Brownell's Beauty* with me is very promising, both as regards quality and productiveness. *Peerless*, after several years' trial, is with me a total failure; not productive, and always soggy, even on light, good potato soil. *White Peach Blow*, good, but very late in ripening, even when planted as early as possible. This variety is seemingly not so good as formerly. Please let me know through the *American Agriculturist* the results of your observations on the different varieties?"—*Ans.* I am not prepared to give an opinion. I will raise all the kinds I have another year on a larger scale. They all seem to be good. *Snowflake* is very handsome. *Brownell's Beauty* is certainly very promising. The Deacon thinks there is nothing so good as the *Peerless*. He has grown it for some years, and thinks the quality equal to the Peach-Blow, while the yield is far greater. I think more of the Late Rose as a main crop than any other I have grown.

PITTING POTATOES.—"R. S." I dig a shallow pit, say eight or ten inches deep, on some high, dry land, where the water can run off. Round up the potatoes in the form of a roof until the center is two feet or more above the level of the ground. Then cover with a layer of straw, eight or ten inches thick. Then cover the straw with earth from the sides of the pit until not a particle of straw is visible. Then put on another layer of straw about six inches thick, and cover it carefully with earth. This layer of straw between two layers of earth, holds "dead air," which is the best of all non-conductors of heat, and will effectually exclude the severest frosts. If you will build a rail fence around the pits the snow will be likely to settle in the pen thus formed and help to keep out the frost. If you are short of straw, you may use potato-vines for the upper layer, but they should be put on thicker than the straw, and greater care taken in covering them with earth. Every particle must be covered with earth. If this is done, the potato-vines will be as good as the straw, or better. I would use plenty of dry straw to cover the potatoes. It absorbs moisture.

PITTING MANGELS.—"R. S." I pit mangels the same as potatoes. But you can make the heaps wider and

SECTION OF MANGEL-PIT.

higher, say six or eight feet wide and five or six feet high. In a large heap, make chimneys, with a little straw every six or eight feet, for the escape of the moisture. I find that the mangels are more likely to be injured by frost just on the level of the ground at *a*, *a*, in the accompanying figure, and also at the top of the heap at *b*. I do not object to having a few frozen ones on top. If we cover so thick on top as to make sure of excluding frost in such a winter as the last, we should be very liable, in an ordinary winter, to have some of the mangels rot from want of ventilation. But at *a*, *a*, we may exclude the frost by plowing around the heap, throwing the furrows all towards it, so that there shall be a foot or more of *loose* earth on top of the undisturbed soil at *a*, *a*.

ROOT CUTTER.—"R. S." I have had one of Gale's root-slicers for some years, and find it a very useful and efficient implement. It cuts the mangels into thin slices or sections. For cows this is all that is needed. But for sheep, and especially lambs, it is desirable to cut the roots into narrow strips about the size of the finger. I wrote to Mr. Gale and he made me a machine that is just what I wanted.

CORN AND COB MEAL.—W. P. Tate, Clearfield, Pa., says he feeds a good deal of corn and cob meal, and has

never yet seen any bad results from using it. He feeds it freely to his milch cows, and also to his mules. He thinks it "better than corn in the ear." No doubt this is so, but is it better than corn-meal alone mixed with cut-feed or bran? Is there nutriment enough in the cob to pay for grinding it? I have thought not. Better shell the corn and either soak it until soft, or grind it.

Book on the Horse.—"S. L. M." Dadd's American Horse Doctor, (price, $1.50, post-paid, from this office,) is a very useful book to a horseman. A more comprehensive work is The Horse in the Stable and the Field, by "Stonehenge," a reputable English horseman. Price, $3.50.

As to Texas.—"P. F. S.," Sidney, Ill. The soil, climate and healthfulness of St. Antonio and New Braunfels in Texas are very good. There are now hundreds of pure Short-horn cattle scattered in almost every part of Texas, where they thrive perfectly well when properly cared for, and where they are making a great improvement in the native stock.

Wheels for Farm Wagons.—"W. A. F.," Le Sueur, Minn. Broad tires are certainly more serviceable than narrow ones, and wear the roads much less. Yet the fashion is for 1½ to 1¾-inch tires. In England, upon the turnpike roads, a wagon with such wheels as these is charged double the toll of one with four or five inch tires, and the heaviest wagons have tires even much wider than this. The advantage of a wide tire is that the wagon sinks less in soft soil, and is therefore drawn easier. Small fore-wheels are better than large ones, because the wagon is turned more easily, and large hind-wheels are better than small ones, because they pass more easily over the obstructions upon rough or soft surfaces; the leverage of the spokes being longer. We believe broader wheels than are in use in this country would be better than the narrow ones.

To Preserve Eggs.—"J. H. C.," Des-Moines, Iowa. One of the best and easiest methods of preserving eggs, is to smear them all over with linseed-oil, and pack them in dry sand or wheat chaff, in barrels headed up tightly.

Fish Culture Educationally.—Fish Culture is to be made a part of the course of instruction at the University of Virginia, where a hatching-house has been erected by the Fish Commissioners of that state, and Mr. Fred. Mather, of the U. S. Fish Commission has been engaged to superintend it. A large quantity of the eggs of the California Salmon will be hatched there this winter.

Grass for a Swale.—"J. B. S.," Grand River, Wyoming T. Red-top (*Agrostis vulgaris*) is the best grass to sow in a place that is sometimes covered with water. It will survive and grow luxuriantly on soil that is covered half the year or more with water. The coarse native grass, however, must be killed out, or it will smother the red-top. Three bushels of red-top seed will be needed for an acre, as it is very light and chaffy, and much of it is infertile.

Deep and Shallow Setting of Milk.—"C. E. S." Whether deep or shallow setting of milk is the best, is a point on which dairymen differ. By far the greater number of them use shallow pans. As the butter is made from the oily part of the milk, no amount of evaporation of the water contained in the cream, can lessen the quantity of butter in it. To lose 5 to 10 per cent of the cream by evaporation in shallow setting, is simply an impossibility. Cream should be set where the air is still, and no current blows upon it, and then there will be no more evaporation than that which occurs from the larger surface exposed in the shallow pans, which will be practically unnoticeable. Every dairyman must test this question for himself, and adopt his own plan. No absolute rule can be laid down, which is best under all circumstances. It is a thing that can never be settled by discussion.

"Thoroughbred" and "Arabian."—"H. B.," Chester Co., Pa. The pure Arabian horse is what its name implies, a horse of pure Arabian blood without admixture; a "thoroughbred" horse is one whose pedigree traces back through the English bred race horses to an Arabian lineage. The thoroughbreds are, in fact, a high bred English race, improved by crosses of Arabian blood, or the direct descendents of horses of that race imported into this country. The English thoroughbred is considered by some as superior to the Arabian. We would as soon breed from a good "thoroughbred" as from a pure Arabian. We would choose the thoroughbred for speed, and the Arabian for bottom and endurance.

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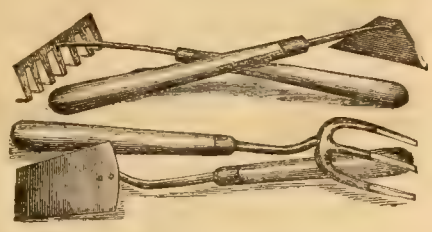

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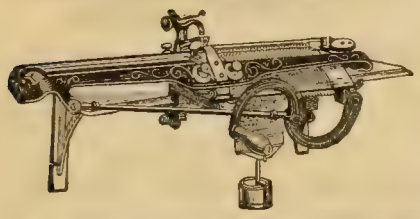

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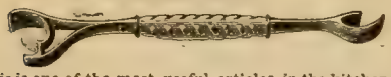

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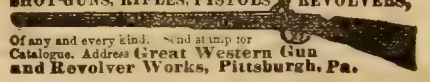

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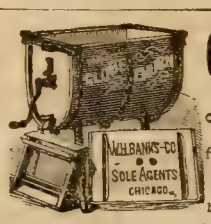

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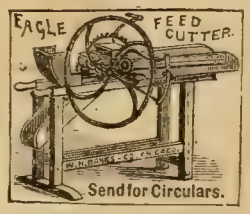

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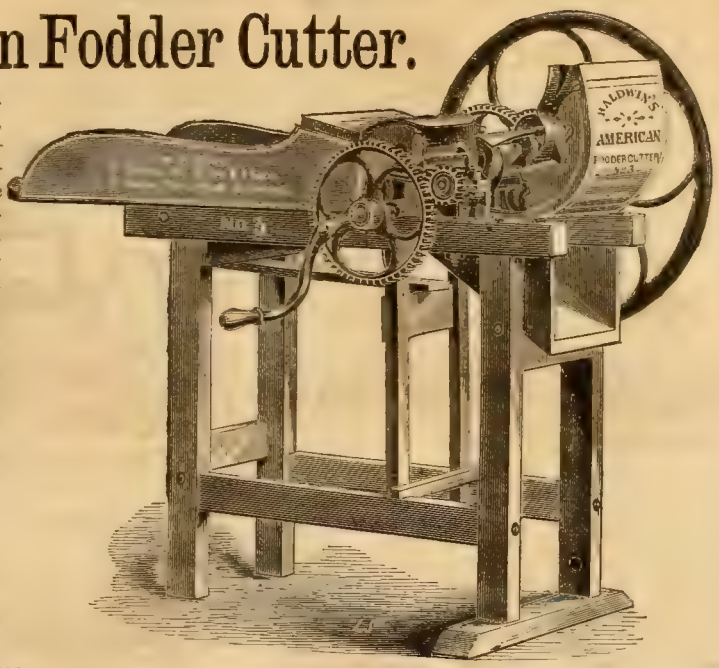

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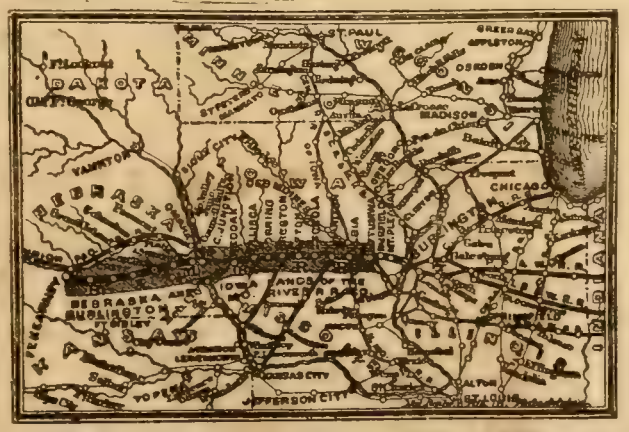

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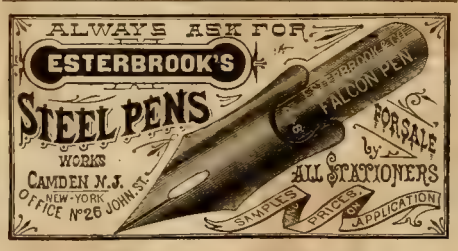

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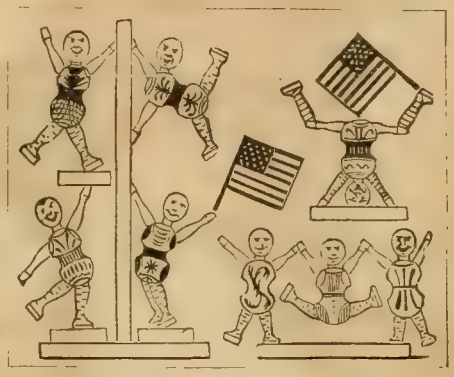

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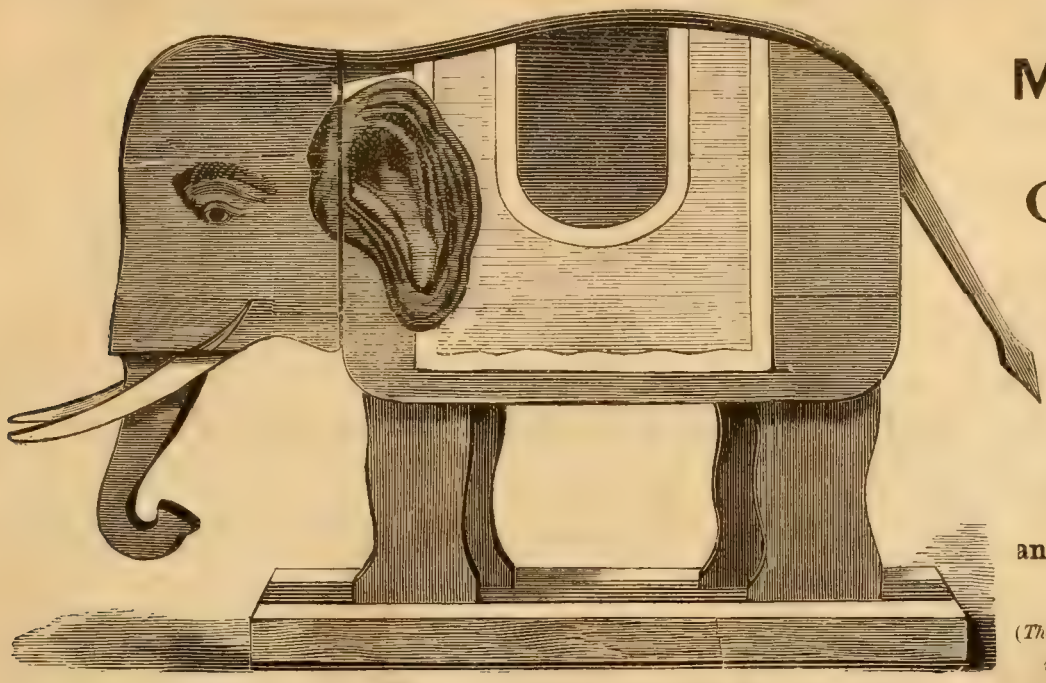

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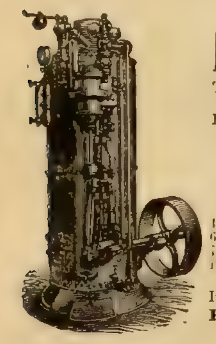

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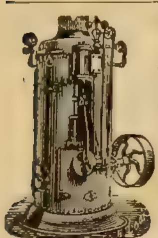

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VOLUME XXXIV.—No. 12. NEW YORK, DECEMBER, 1875. NEW SERIES—No. 347.

THE POULTRY BUYER — *Drawn and Engraved for the American Agriculturist.*

One who visits the market of a large city, especially near the holidays, is struck with the immense stock of poultry; chickens, turkeys, geese, and ducks, are presented in such profusion, that he wonders how such a multitude could be brought together. If the same person happens to be in the fall of the year in the country, anywhere from Maine to Michigan—or further west, he will often see, not only on the main roads, but on the byways, leading to remote farm-houses, the coop-like wagons of the poultry buyer, passing from farm to farm, the sources of supply, and gathering up the units which make up the millions of poultry annually required by the large cities. Certain kinds of business develope peculiar characters; the tin-peddler is very much the same, wherever he may be, and the poultry buyers, as a class, have the same general characteristics. The poultry collector lives by buying and selling, hence he is shrewd; but his buying is mostly from the women of the farm, the fowls being generally their perquisites, hence he is polite, and has a good knowledge of what Sam Slick said were essential to a clock peddler, "soft sawder and human natur'." The poultry buyer is an important person in a thinly settled farming district, for he comes to buy, and not like the majority of traveling tradesmen, to sell, and more than all he does not trade or "dicker," but buys for cash. Many a good woman depends upon the sale of the fowls she has brought up from the nest, for her scanty supply of ready money, and the traveling buyer affords her the only means of disposing of them, hence his coming, especially in sparcely settled districts, is an event of no little importance. In the older states the buyer generally manages in more style than elsewhere; he drives on in advance, and makes his purchases, letting his assistants come along later, to pick up and carry off the fowls he has bought; but where farms are few and far between, the buyer drives his own wagon, and picks up fowls, turkeys, geese, or ducks, as he may happen to come across them.

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Calendar for December.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	W	7 10	4 28	7 21	7 5	4 31	7 28	7 0	4 39	7 34
2	T	7 11	4 28	8 25	7 6	4 31	8 30	7 1	4 39	8 36
3	F	7 12	4 28	9 32	7 7	4 31	9 36	7 2	4 39	9 40
4	S	7 13	4 28	10 38	7 8	4 32	10 41	7 3	4 39	10 44
5	S	7 14	4 28	11 45	7 9	4 32	11 47	7 4	4 38	11 48
6	M	7 15	4 28	morn	7 10	4 32	morn	7 5	4 38	morn
7	T	7 16	4 28	0 53	7 11	4 32	0 53	7 6	4 38	0 54
8	W	7 17	4 28	2 3	7 12	4 32	2 2	7 7	4 38	2 1
9	T	7 18	4 28	3 16	7 13	4 32	3 13	7 8	4 38	3 11
10	F	7 19	4 28	4 33	7 14	4 32	4 29	7 9	4 38	4 25
11	S	7 20	4 28	5 55	7 15	4 32	5 19	7 10	4 38	5 13
12	S	7 21	4 28	rises	7 16	4 32	rises	7 11	4 38	rises
13	M	7 22	4 28	5 15	7 16	4 33	5 22	7 11	4 38	5 39
14	T	7 23	4 28	6 32	7 17	4 33	6 39	7 12	4 38	6 45
15	W	7 24	4 29	7 52	7 18	4 33	7 57	7 13	4 39	8 2
16	T	7 24	4 29	9 6	7 18	4 33	9 10	7 13	4 39	9 14
17	F	7 25	4 29	10 18	7 19	4 33	10 20	7 14	4 40	10 22
18	S	7 25	4 29	11 24	7 19	4 33	11 25	7 14	4 40	11 26
19	S	7 26	4 30	morn	7 20	4 35	morn	7 15	4 41	morn
20	M	7 26	4 30	0 29	7 20	4 35	0 29	7 15	4 4	0 28
21	T	7 27	4 31	1 32	7 21	4 36	1 31	7 15	4 42	1 29
22	W	7 27	4 31	2 36	7 21	4 36	2 33	7 16	4 42	2 30
23	T	7 28	4 32	3 40	7 22	4 37	3 36	7 16	4 43	3 32
24	F	7 28	4 32	4 45	7 22	4 37	4 40	7 16	4 43	4 34
25	S	7 28	4 33	5 49	7 22	4 38	5 42	7 17	4 44	5 36
26	S	7 29	4 33	6 53	7 23	4 38	6 46	7 17	4 44	6 38
27	M	7 29	4 34	sets.	7 23	4 39	sets.	7 17	4 45	sets.
28	T	7 29	4 34	5 12	7 23	4 39	5 18	7 18	4 45	5 25
29	W	7 29	4 35	6 18	7 23	4 40	6 21	7 18	4 46	6 30
30	T	7 30	4 36	7 22	7 24	4 41	7 6	7 18	4 47	7 31
31	F	7 30	4 37	8 31	7 24	4 42	8 31	7 19	4 48	8 38

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AMERICAN AGRICULTURIST.

NEW YORK, DECEMBER, 1875.

At the close of the present year there is much cause for congratulation amongst farmers. Their condition is much more cheerful than they had reason to expect in the spring. Generally crops have been abundant and prices are fair. The farmer must necessarily live in hope, for he cannot tell how events may result. The past season has been to the farmer full of anxieties. Disasters have continually threatened him. The weather has been strangely inconstant and fickle, and it has been more from good fortune than his own efforts, that disaster has been averted. Now that the real condition of affairs is ascertained, we find the crops are unexpectedly heavy, and that the quality is better than we had reason to hope for. Some of the western states, where thousands of farmers a year ago feared destitution, are now overflowing with grain which sells at remunerative prices. Beef, pork, butter, cheese, and with the exception of cotton and wool, altogether produce is high in price, so much so that some suffering is entailed upon those engaged in other industries, who are worse off now than for many years past. It is one of the advantages of a farmer's life, that he is to a great extent independent of the fluctuations of trade. With his farm *free from debt*, he is sure at least of shelter, food, fuel, and the most of his clothing, although his surplus may be totally unsalable; but while he feeds other people, this can never happen, and a market for what he does not need himself is always to be found.

Hints about Work.

The Winter's Study.—Now that the season for active labor is over for 1875, the farmer has leisure before him that may be turned to good account. With the general spread of information, the farmer can not afford to be behind his fellow citizens in the knowledge of common things. Every farmer should club with his neighbors to form a library of at least one-hundred well selected, standard, practical books, relating, first to his own profession, agriculture, and the sciences connected with it; there are now many excellent, plainly written manuals, upon all the collateral sciences, then there should be works on American and general history, on political economy, and lastly in general literature.

Feeding Stock.—There is opportunity now for those who desire—and every one should—to try some of the experiments in feeding, referred to in the articles by Prof. Atwater, which have been published in the *American Agriculturist* during the past year. These articles are worthy of close and careful study, for they put many things in quite a new and different light from that in which most farmers have hitherto viewed them. Economy demands that every ounce of nutriment should be got out of the fodder we feed. There is no doubt that some of it is lost in our usual methods of feeding stock.

Horses.—Care is required in grooming and cleaning horses. No gathering of scurf, or waste of the skin, or of dried perspiration, should be permitted to collect beneath the coat. But this should not in every case be torn away with sharp curry-combs. A tender skin is injured by rough currying. A moderately stiff brush, made with an uneven surface, is sufficient in nearly every case. But labor must not be stinted in keeping horses clean.

Cows.—Fresh cows need a large quantity of water at this time, and this is best given in the shape of warm slops of bran, or a mixture of corn-meal and middlings. Our milking cows have done very well on finely cut, well cured corn-fodder, wetted and mixed with corn and middlings ground together very fine. One bushel of cut fodder, and 3 quarts or 4½ lbs. of the meal, is the daily allowance. A sheaf of oats, or a small feed of good clover hay, is given at noon. In the case of some very large milkers and butter-makers, this allowance of meal may be sometimes doubled with good effect. Cleanliness is of the greatest importance in the winter time. The cows and calves should be carded every day, and their coats kept free from filth. Lice will never be found upon stock thus managed.

Calves may be kept loose in a shed by themselves, with an open yard in which they may run in the day time. They should be kept well littered, and the litter need not be removed until spring. If the litter is short, the manure will be fine and in excellent condition for use. If whole corn-stalks are used for litter, this plan will not answer.

Bedding in the stables is of great importance, both as regards the comfort of the stock, and the condition of the manure heap. It will pay to cut all the litter with a fodder cutter, when it can be done by horse-power. Where leaves or sawdust can be procured for bedding, every pound of straw should be used for feed. Otherwise cut straw, when used for bedding, is more absorbent than long straw, and more quickly rots in the manure heap. The stock can be kept very clean with short bedding.

Sheep.—The sheep sheds and yards should be kept well bedded with short litter. This may be shaken up every day, to keep the surface clean, and if it is not removed at all until spring, the sheep will do as well, or better than if the manure is disturbed. The litter and droppings become firmly packed until two feet thick, without any evil or disagreeable effects. The feed racks should be arranged so that the sheep can not thrust their heads between the bars and tear the wool from their necks, or scatter dust, etc., amongst the wool.

Swine.—There is a good prospect for high prices for pork for some time yet. Pork and corn generally bear relative values, and whatever the price of corn, it can be turned into pork with profit. But the better the machine (or the pig) for working up the corn, the greater is the profit. There has been a vast change for the better in the stock of pigs and hogs, but there is room for further improvement. The aim should be to reduce the offal, and produce a pig or hog as nearly as possible all bacon and hams, and one that will come to market without being wintered over.

Pure Water is as necessary for stock in the winter time as in the summer. There is much suffering and consequent loss amongst stock for want of water. Ice cold water is injurious, and animals will not drink enough of it to supply their wants; unless sufficient is supplied, digestion cannot go on properly. Water should be given in the yards three times a day. It should be drawn from wells

or cisterns. The trough should be emptied into a drain as soon as the animals have drank so that ice does not gather in it.

Manure should be piled so that it will not be frozen. This may easily be done. How to do it was explained in "Walks and Talks on the Farm" last month. If the directions there given be followed the heap may be kept hot all the winter. If it is seen to steam, no harm is done. That is only moisture escaping, and no ammonia is being lost.

The Barn-Yard, should be kept dry and free from water. The water from the roofs should be carried off by spouts and drains. The cost of these will soon be repaid by the saving in the value of the manure which would otherwise be washed away, and the comfort of having clean and dry yards.

Poultry.—A warm shed for the fowls will help to supply the house with fresh eggs. Warm food will also help. Boiled potatoes mashed with corn-meal or wheat middlings and fed hot is excellent food for hens, and will greatly encourage them to lay. Comfortable dry nests should be provided, and if these are supplied with pine saw-dust, they will be kept free from lice. Fowls should be banished from the barn and stables, or they will soon stock them with fleas and lice, which may be a source of much trouble to the horses and cows.

Work in the Horticultural Departments.

In many localities all out-door work is at an end, and in many others it soon will be; and whatever remains to be done in the way of preparation for winter, must receive immediate attention. In mild climates, or an unusually mild season, the work indicated for November and October may be continued.

Orchard and Nursery.

Fences and Gates.—Put in good order; if cattle get in they will destroy young and injure old trees.

Manure may be carted to the orchard when the ground is frozen, or there is snow upon it.

Mice and Rabbits.—Tread the light snow firmly around the trees, soon after it falls, to prevent mice working under it; remove hay or straw which has been used for mulching, as it will harbor mice. Injury by rabbits is best prevented by smearing the trunks with blood.

Pruning may be done if the weather is not too cold; cover all cuts with shellac varnish or paint, to prevent the water from entering.

Fruit Garden.

Protection is necessary for the less hardy varieties of raspberries; lay down the canes and cover with a few inches of earth, first removing the soil from one side of the plant, to allow it to be bent without breaking. Grapevines also do better in very cold climates, if laid down and covered.

Grapevines.—Prune before severe weather, and save the wood for propagating new plants; cut it into lengths of two or three eyes, tie in small bundles, and store in sand or earth in the cellar. In northern localities, lay down the vines and cover them with earth wherever practicable.

Strawberries.—Cover with hay or leaves on the approach of cold weather, but do not bury the crowns too deeply, else they may rot.

Kitchen Garden.

The work here is mainly in preserving the crops of last season, and in preparing for the coming year. If the root-cellars are not properly banked up with earth, or protected by straw, there will be danger of injury to the contents by frost. Provide double sashes for at least one window, so that there will be some light in the cellar. Ventilate the cellar by the use of a tight wooden box, with sides 4 to 6 inches by 10 inches, which runs from the cellar ceiling to the top of the building above, where it passes out directly under the eaves; a slide placed in the tube, will allow it to be closed during very severe weather.

Parsnips, Salsify, etc., are hardy, and may be left in the open ground until spring, as freezing benefits them.

Spinach needs a slight covering of leaves or straw, to preserve it properly over winter, but do not apply until quite cold.

Cabbages.—If not all gathered, attend to them at once, and store in the manner described last month.

Horseradish.—Dig before the ground freezes, and store in boxes of earth. Save the small roots for sets for next season.

Manure.—Provide absorbents for all liquid manure from the stables, and all house slops. Every means should be taken to increase the supply of manure, for without it good garden crops are impossible in the older states. Save all poultry droppings, wood ashes, and anything else which can be used as a fertilizer. Leaves can in most country places be had in abundance for the trouble of gathering, and may be used for bedding, or composted at once with stable manure.

Flower Garden and Lawn.

There will still be half-hardy shrubs and trees to protect, and herbaceous plants to cover with straw or leaves. Do not cover too soon; remember that the object in covering at all is to keep the plants from too sudden changes.

Cold Frames must be aired during mild days by lifting the sashes, else the plants are liable to grow and be injured. During a heavy snow storm, followed by very cold weather, it will do to leave the snow on the sashes until the weather moderates, as this will keep our frost. See that mice do not get into frames where there are seeds or plants.

Bulbs should be planted by the first of the month if possible, otherwise the ground may freeze so hard that it cannot be done at all. The bed may be covered with a thick coat of straw, which will keep out frost for several days, unless too severe.

Greenhouse and Window Plants.

Window Boxes.—If these were overhauled and refurnished in the fall, the plants will by this time be growing finely. It is not yet too late to make window boxes if one has the plants at hand in the greenhouse; select such kinds as will stand the dry air of a room: Dracænas, and the variegated Cyperus make good center plants, while the soil may be completed with Tradescantias, Moneywort, and Selaginellas. After planting, water thoroughly, and shade for a few days until well established.

Ivies are among the most valuable of room decorations, and may be used in various ways. A good plant of Ivy, potted in rich soil, and placed where it can get a little sun during the day, will, when well-established, grow luxuriantly; the leaves are so thick and firm, that they are easily kept clean by wiping with a damp sponge.

Ventilation should be given every day, unless the weather is too severe, to plants in the window as well as in the greenhouse.

Fumigate at least once a week with tobacco stems, slightly moistened, to prevent blazing. It is best to do this at night, when the houses can be closed, and in the morning syringe with water, using a fine rose.

Camellias.—Keep as cool as possible to prevent flowering early; the plants can be brought into heat as wanted.

Bulbs.—Hyacinths and Narcissuses for early winter blooming in the house and greenhouse, should have been potted in October. They may be potted now for late; place in a cellar and water occasionally, until the roots are well-established, when they may be brought into heat as required.

Climbers.—Keep tied to trellises or greenhouse rafters, and as they are liable to become infested with insects, care must be taken to examine them often for mealy bug and red-spider.

Epiphyllums will now need more water, as they are about coming into bloom.

Seeds.—Sow a few pots of seeds of Mignonette, Candytuft, Sweet Alyssum, etc., for cut flowers during the winter.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Nov. 12th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	491,000	4,875,500	2,011,000	151,000	412,000	1,379,000
25 d's *last* m'th	517,000	4,9[illegible]	3,771,000	19,700	[illegible]9,000	1,411,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	473,000	5,104,000	2,912,000	69,000	431,000	2,107,000
25 d's *last* m'th	4[illegible]2,000	5,013,000	4,080,000	17,000	215,000	1,786,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875..	491,000	4,873,000	2,011,000	15[illegible],700	412,000	1,379,000
26 days 1874..	324,000	3,115,000	1,807,000	104,000	471,000	1,306,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	473,000	5,104,000	2,912,000	69,000	431,000	2,107,000
26 days 1874..	309,000	4,318,000	4,106,000	87,000	385,000	1,504,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Nov. 8, 1875..	3,219,457	1,112,998	79,355	277,400	815,591	249,986
Oct. 11, 1875..	2,382,502	1,682,246	10,910	21,688	439,698	261,428
May 11, 1875..	961,804	1,542,921	16,124	16,727	71[illegible],209	229,655
Jan. 11, 1875..	3,675,122	1,049,900	50,889	191,470	877,014	145,647
Nov. 9, 1874..	3,600,131	1,727,510	19,1[illegible]3	117,185	791,722	135,882

4. *Exports from New York, Jan. 1 to Nov. 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1875	1,622,6[illegible]3	23,636,004	11,948,115	159,972	225	117,481	288,030
1874	1,890,775	33,079,216	17,596,617	584,465	3,320	106,342	321,249

5. *Receipts at head of tide-water at Albany each season to Nov. 7th.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875	97,500	17,111,400	7,929,900	181,400	2,160,700	2,168,600
1874	159,200	21,295,660	17,[illegible]11,800	26[illegible],200	1,693,500	2,797,600
1873	128,200	2[illegible],192,600	17,19[illegible],700	914,700	1,665,400	3,010,203
1872	104,100	7,801,100	25,481,200	377,300	2,119,000	5,077,300
1871	233,000	18,184,000	18,124,000	707,700	2,528,000	4,833,200
1870	56,600	13,918,300	1,581,300	529,900	2,[illegible]76,800	5,210,900

CURRENT WHOLESALE PRICES.

	Oct. 12.	Nov. 12.
PRICE OF GOLD	**116 1-2**	**114 3-8**
FLOUR—Super to Extra State	$4 90 @ 6 40	$4 90 @ 6 25
Super to Extra Southern..	4 90 @ 8 75	4 90 @ 8 75
Extra Western	5 40 @ 8 50	5 35 @ 8 50
Extra Genesee......	5 90 @ 7 25	6 00 @ 7 25
Superfine Western	4 90 @ 5 40	4 90 @ 5 30
RYE FLOUR	4 25 @ 5 50	4 00 @ 5 50
CORN-MEAL.	3 00 @ 4 15	3 25 @ 4 00
BUCKWHEAT FLOUR, ₩ 100 lbs	2 90 @ 3 25	2 40 @ 2 75
WHEAT—All kinds of White.	1 35 @ 1 55	1 30 @ 1 50
All kinds of Red and Amber.	90 @ 1 40	95 @ 1 45
CORN—Yellow	73 @ 74	76 @ 77
Mixed	67 @ 73½	73 @ 76
White......	76 @ 77	75 @ 82
OATS—Western	36 @ 55	42 @ 58
State	42 @ 55	41 @ 53
RYE	90 @ —	85 @ 92
BARLEY	1 00 @ 1 30	80 @ 1 25
BUCKWHEAT, ₩ bush......	80 @ —	68 @ 72
HAY—Bale, ₩ 100 lbs	60 @ 1 00	65 @ 1 10
STRAW, ₩ 100 lbs......	50 @ 90	50 @ 95
COTTON—Middlings, ₩ lb	13⅝ @ 14⅛	13⅛ @ 13⅞
HOPS—Crop of 1875, ₩ lb	10 @ 15	12 @ 17
FEATHERS—Live Geese, ₩ lb	35 @ 60	35 @ 60
SEED—Clover, ₩ lb	13 @ —	10½ @ 11
Timothy, ₩ bushel	2 60 @ 3 00	2 25 @ 2 65
FLAX, ₩ bushel	1 60 @ 1 75	1 55 @ 1 65
SUGAR—Refi'g & Grocery ₩ lb	6⅝ @ 9¼	6⅜ @ 9⅜
MOLASSES, Cuba ₩ gal.	30 @ 40	28 @ 38
New Orleans, new crop, ₩ gal	— @ —	70 @ 80
COFFEE—Rio (Gold).	19 @ 21½	17⅜ @ 20⅜
TOBACCO, Kentucky, &c., ₩ lb.	8 @ 25	8 @ 25
Seed Leaf, ₩ lb	7 @ 45	6 @ 25
WOOL—Domestic Fleece, ₩ lb	25 @ 55	28 @ 60
Domestic, pulled, ₩ lb	25 @ 48	27 @ 50
California, clip......	15 @ 31	14 @ 33
TALLOW, ₩ lb	10⅜ @ 10½	9¾ @ 9⅝
OIL CAKE—₩ ton	37 50 @ 45 00	40 00 @ 44 50
PORK—Mess, ₩ barrel	22 50 @ 22 75	22 50 @ —
Prime Mess, ₩ barrel	19 50 @ 19 75	19 00 @ 19 50
BEEF—Plain mess......	8 00 @ 10 25	11 00 @ 12 00
LARD, in tres. & barrels, ₩ lb	13 @ 13⅝	13⅛ @ 13⅝
BUTTER—State, ₩ lb......	24 @ 40	24 @ 34
Western, ₩ lb	16 @ 37	16 @ 34
CHEESE......	4 @ 13⅛	4 @ 13⅛
BEANS—₩ bushel......	1 70 @ 2 75	1 50 @ 2 30
PEAS—Canada, free, ₩ bu	1 15 @ 1 20	1 15 @ 1 18
EGGS—Fresh, ₩ dozen	27½ @ 30	27 @ 32
POULTRY—Fowls......	12 @ 18	9 @ 18
Turkeys—₩ lb......	14 @ 19	11 @ 18
Geese, ₩ pair......	1 25 @ 2 25	1 12 @ 1 87½
Geese, ₩ lb......	— @ —	9 @ 15
Ducks, ₩ pair......	55 @ 80	50 @ 75
Ducks, ₩ lb......	— @ —	14 @ 19
WOODCOCK, per pair......	80 @ 1 00	50 @ 60
CHICKENS, ₩ lb......	14 @ 19	18 @ 20
GROUSE, ₩ pair......	90 @ 1 00	95 @ 1 12
PARTRIDGE, ₩ pair......	50 @ 1 00	50 @ 1 12
DUCKS, Wild, ₩ pair......	30 @ 70	55 @ 1 50
QUAIL, trapped, ₩ dozen......	— @ —	2 50 @ 3 50
HARES, ₩ pair......	— @ —	60 @ 75
RABBITS, ₩ pair......	— @ —	35 @ 50
VENISON, ₩ lb......	13 @ 15	13 @ 17
TURNIPS ₩ bbl	1 25 @ 1 75	75 @ 1 00
CABBAGES—₩ 100......	2 00 @ 8 00	2 50 @ 5 50
ONIONS—₩ bbl	1 00 @ 1 75	1 00 @ 2 50
POTATOES—₩ bbl......	1 00 @ 2 00	75 @ 2 25
SWEET POTATOES ₩ bbl.	1 50 @ 2 50	1 25 @ 2 25
BROOM-CORN	6 @ 12	6 @ 11
PEARS, per box......	— @ —	3 70 @ 4 00
PEARS, ₩ bbl......	2 50 @ 12 00	8 00 @ 14 00
GRAPES, ₩ lb......	4 @ 11	5 @ 9
APPLES ₩ barrel	1 75 @ 2 37½	2 00 @ 3 50
CRANBERRIES—₩ bbl......	8 00 @ 10 00	7 50 @ 10 50
QUINCES, ₩ bbl......	@	1 50 @ 9 00
SQUASH, ₩ bbl......	30 @ 60	30 @ 60
CAULIFLOWER, per bbl.	1 50 @ 3 50	1 50 @ 3 50
PUMPKINS, ₩ 100......	— @ —	— @ —
CUCUMBERS, pickle, ₩ 1000...	— @ —	3 00 @ 5 00

Gold has been up to 117⅛, and down to 114, closing Nov. 12th at 114⅜, as against 116½ on Oct. 12th..... The movements in Breadstuffs during the month have been on a restricted scale. The demand has been less satisfactory from foreign buyers. The home trade wants have been less urgent. The arrivals have been ample. Prices have been depressed and irregular, especially toward the close, in the instances of Flour, Wheat, Corn,

and Barley. The offerings of Wheat, other than prime, have been liberal. Holders of strictly prime to choice Wheat, have not been eager to place supplies at the ruling figures, in view of the small proportion of the grades named, now in stock at this point, and the relative strength of the interior markets. Corn has been in light supply for some days past, yet not in very urgent demand. Rye, of prime to choice quality, attracted more attention toward the close, chiefly from buyers for shipment to the Continent. Barley has been pressed for sale, and has been very unsettled as to values. Oats have been variable, with the best grades offering quite reservedly at current quotations ...Provisions have been more active. Western Mess Pork, and western steam Lard, advanced sharply, chiefly under speculative manipulations on October options, the settlement of which seriously disturbed trade; and at the close values were depressed. Butter, Cheese, and eggs closed steady....Cotton has been quoted lower, on a restricted business, but closed steadier, with more inquiry....Wool has been held more firmly, and has been in fair demand....Tobacco, Naval Stores, and Petroleum quiet... Hops have been in better demand, and at the close quoted stronger in price....Hay firmer and more sought after ...Seeds inactive and irregular in price....Ocean freights have been less active, and quoted easier. Flour by sail and steam to London, 2*s.* 8*d.* @ 2*s.* 9*d.* per bbl.; Grain by sail, to do., 8½*d.* @ 9*d.* per bushel; Grain by steam to Liverpool, 8*d.*, and by sail, to do., 7 @ 7½ *d.* per bushel. Grain tonnage for Cork and orders, 5*s.* 9*d.*@6*s.* 3*d.*; for Penarth Roads, and orders, 5*s.* 6*d.* @ 5*s.* 9*d.*; for the Continent, 6*s.* 3*d.* @ 6*s.* 6*d.* per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Oct. 18	8,794	131	2,957	31,104	23,118	66,137
Oct. 25	10,773	87	2,238	27,827	34,603	75,528
Nov. 1	10,891	79	2,312	28,127	32,118	71,527
Nov. 8	10,113	87	1,884	35,254	29,689	76,024
Nov. 15	8,480	136	1,859	34,029	29,357	73,862
Total for 5 Weeks	49,051	523	11,238	154,351	158,915	374,078
do. *for prev. 4 Weeks*	41,092	376	11,233	124,819	94,353	271,903

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	12,252	130	2,809	38,563	39,728
do. do. *last Month*	10,273	91	2,808	31,212	23,588
do. do. *prev's Month*	9,650	74	2,821	26,79	17,825

Beeves.—The market which opened strong under small receipts, and promised a fair if not good business, gave way early, and the second week of our report was the most disastrous for sellers since the same week last year, when the market was glutted with stock, and owners lost from $5 to $15 per head. Then the average price was 9½c. per lb. In the week referred to, prices gave way fully 1c. per lb. on poorer grades and a ½c. on extra. Since then on full arrivals the market has been without recovery, and business has been unsatisfactory. The railroad combination to tax all stock arriving here by ordering everything to be billed "subject to yardage charges as established by the stock-yard companies," which are in fact the Pennsylvania, Erie and N. Y. Central railroad companies, has not tended to improve matters. This regulation is to be fought in the courts, and if upheld there will be nothing to prevent the taxing of every kind of freight, that may pass through the hands of railroad companies, by means of warehouse charges. The market closes heavy, without any improvement, a few choice selections which retailed at 13¼c.@13½c. per lb., to dress 58 lb. per cwt., alone helping the average somewhat above the previous week. The range for common to prime natives was 8½c.@12½c. to dress 53 to 58 lbs. on the 112 lbs., and for Texan and Cherokee steers, 7½c.@10½c. per lb. to dress 55 to 58 lbs.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Oct. 18	7½@13½c.	10¼@11¼c.	10¾c.
Oct. 25	8½@13 c.	9 @10½c.	10 c.
Nov. 1	7 @13½c.	9½@10½c.	10¼c.
Nov. 8	7 @13½c.	9½@10½c.	10¼c.
Nov. 15	7½@13½c.	10 @11 c.	10½c.

Milch Cows.—The offerings have been light, else prices must have given way under the dull business that has prevailed the past month. Poor cows are not salable at any price, and the demand is fair for good at $70@$75 per head, calf included. To be forced off, poor stock would not bring over $30 per head....**Calves.**—The market for calves has been dull, with a slow business at lower prices. Grassers sold at the close of our report at $6 per head for poor, up to $12.50 per head for the best lots. Fat veals sold at 7½c.@10½c. per lb. live weight. ... **Sheep and Lambs** have been in demand with large sales at low prices. Good stock have met with a ready market, while poor sheep have been dull and remain so. The closing rates were steady at 4½c.@6½c. per lb. live weight, for poor to fair; 6¾c. per lb. for a few selections of Ohio and Canada sheep, and 5¾c.@7½c. per lb. for poor to extra lambs....**Swine.**—Hogs have been quiet and steady. The arrivals of live have been all consigned direct to slaughterers, and none have been offered for sale. The latest quotations were 8½c. for State hogs. City dressed sold fairly at the close at 9¾c.@10¾c. per lb.

Remember

The Valuable Premiums.

See Page 477, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

containing a great variety of Items, including many useful Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Speak a Word for the German American Agriculturist.—For 16 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Notices of Catalogues and Books intended for this number must, from the crowded state of our columns at the end of the year, be left over.

The Index for the volume now closed, is issued on a separate sheet. Formerly we have, as is the usual custom, given the index within the regular pages; we give this year the full number of pages of reading matter, and the index besides. Save the Index.

A Few Hints to Correspondents.—The end of one year and the beginning of another, always brings us in relations with many new correspondents, and we would suggest to them, as well as to many old ones who seem to have forgotten them, a few points to observe in writing to the editors....Unless you wish to sign your name, do not write at all. Anonymous letters are not noticed. Sign the article what you please, but give the real name also....Do not ask our opinion of any advertising "Doctor." We do not personally know any of them ...Do not ask our advice as to change of locality or of business: it is a delicate matter to advise an intimate friend or relative in such a case; and impossible, when the party is an entire stranger....We are always glad to hear what our friends have done, either in the "farm, garden, or household," and failures are often as instructive as successes. Matters of personal experience are always welcome; essays upon "matters and things in general" are not likely to be of use. We are willing to admit that the county the writer lives in is the best in his state, and that his state is the best in the Union, for they are so to him, but being the *American* Agriculturist, we cannot give room for the special advocacy of the claims of any portion of it. It is such a great and grand country, this of ours, that did we publish all the praises of special portions of it that are sent to us, we should have no room for anything else... No matter if you are frequently in the city, if you have an article, send it by mail, or leave it, but do not ask to see the editor that you may talk to him about it. Editors judge of articles in their own time, and in their own way. We not long ago had a case in which a person insisted upon *reading* an article to one of the editors, something we never before heard of ...If your article is declined, it is no indication that it lacks merit; we often have several articles at once upon a subject that we do not care to treat at all at that time. An editor's duty is to leave out, as well as to publish, articles. Do not ask *why* he did not publish yours....The English papers generally, and some American journals, give notice that they will return no manuscripts whatever; we endeavor, when stamps are enclosed, to return those which are declined. ....Crochety correspondents will do well to remember that it has been decided in the courts, that publishers are not responsible for any volunteer articles sent to them; unless it can be shown that the articles were ordered, the writer has no claim upon the publisher.

Insects and Plants.—All intelligent persons are interested in the means by which nature works to bring about certain results, and while every cultivator knows the great injury insects inflict upon vegetation, but few are aware that these are of so great use to plants, that many kinds would disappear from the face of the earth did not insects aid them in producing seed. The relations between the two—insects and plants—have within the past few years, occupied the attention of naturalists at home and abroad, and the results are most wonderful and interesting. Fortunately, this is a matter which any close observer can study without being either a botanist or an entomologist to any greater extent than most intelligent persons are, and every one who lives in the country, or has a garden, has opportunity to make interesting observations. In the volume for 1876, we shall give a series of articles upon this most attractive subject, and when we say that they will be by Prof. Asa Gray, it is assurance that while they will be charmingly popular, they will also be scientifically accurate.

Ohio Horticultural Society, meets at Toledo, December 1-3.—If notices came earlier, the story would be longer.

The Money in Pork.—It is estimated that the pork packers of Chicago alone, will need 1,500,000 hogs, averaging 330 lbs. each, which at 7 cents per pound, will cost about 35 million dollars. This amount of money will be scattered throughout Illinois, Iowa, Kansas, and Nebraska. A nearly equal sum will go from Cincinnati into Ohio, Missouri, and Indiana, with large amounts from St. Louis; and much from Milwaukee will go into Michigan, Wisconsin, and Minnesota.

The "White Sage" of the Far West.—Under this title we gave on p. 57, in Feb. last, a description and engraving of a plant of great importance to farmers in Nevada and other parts of the far west, who find it a very valuable forage. In the article it was stated that the plant "is said to impart a peculiar and rather disagreeable flavor to the beef fed on it." This statement was made on the authority of Prof. Sereno Watson, the botanist of Clarence King's "Survey of the 40th Parallel," who no doubt derived it from what he regarded as good authority. However, our Nevada friend, a trustworthy source, whose account of the plant was quoted in the former article, dissents from this, and says: "White Sage has but little taste or smell, except when it is green and full of juice, and neither beef or butter made from cattle fed upon it in the winter have any disagreeable taste; the butter made from it in winter has the yellow color of that from summer feed in a greater degree than that from cows fed upon straw and potatoes."

Ordering Clothing.—The rules for self-measurement sent on application by our neighbors, Freeman & Woodruff, allow persons at a distance to buy their clothing in New York, if they wish to do so.

Important to Seedsmen. — A trial which concluded on Nov. 8th, in one of the New York City Courts, is of interest to every seedsman in the country. The case in brief is this: one Van Wyck, a mar-

ket gardener, purchased last spring of R. H. Allen & Co., a quantity of cabbage seed. The plants from this seed. treated in the usual way, failed to head, but run to flower, and VanWyck brings suit against Allen & Co. for the value of the cabbages which he might, could, would or should have raised, and a jury award him $1.972.13. We are not informed what the 13 cts. are for, but it is well to be particular about such things. We have not seen the evidence that was presented, and have not the data upon which to form an opinion, but the case will be immediately appealed to a higher court. If the "Court of last Appeal" shall decide that every seedsman is responsible for the estimated value of the crop that the purchaser thinks should be raised from the seed he buys, why that is an end of the seed business. A full report of the trial might put a different aspect upon it, but as the matter is briefly given in the daily papers, it seems to us to be—to say the least, the most remarkable decision on record, and unless the complainant can show intentional fraud, a thing not possible in a house like that of R. H. Allen & Co., it is hardly possible that, this decision can be sustained. The matter does not end with the seed business; to carry out the same principle: if we sell a person a cow in calf, and the calf turns out to be mal-formed, we are responable for all the milk, butter, cheese and beef that calf should have made. Or if one sells a setting of eggs, which hatch all cockerels, the buyer can claim damages for the eggs that he thinks the setting should lay. If this is to be a precedent, dealers will cease to sell seeds altogether, or make a contract with each purchaser that they shall not be held responsible for damages if the seeds fail in any respect.

Lectures on Tree-lore—*Vorlesungen über Dendrologie*. Von Karl Koch. (Stuttgart, Enke, 1875, pp. 408, 8vo.) This is a book to be commended to our German readers, and also to amateurs who read German. Karl Koch is one of the Botanical Professors in the University of Berlin, and the most experienced dendrologist living. His book on the trees and shrubs in cultivation in northern and middle Europe, is the standard authority. This present volume, (which Schmidt, of this city, has for sale), is a course of popular lectures which Prof. Koch delivered in Berlin last winter, and it is full of interesting matter treated in an interesting way. The first part is a historical sketch of landscape gardening and gardens from the earliest times down to our own days. The second discourses on the structure, growth, and life of trees, the importance of woods and trees to man, and their relations to climate. The third deals with coniferous trees in four lectures. Although popular in form, they are full of good scientific matter, plainly expounded. A. GRAY.

Advance in Freights.—At the close of navigation an advance of freights is threatened which will raise the cost of transportation of a bushel of wheat from Minnesota to New York to 54 cents. This is nearly double the present rates, and will simply reduce the value of every bushel of wheat west of Chicago 24 cents a bushel; for, unfortunately, the price of our wheat is fixed not in our own market, but in a foreign one.

Very Suggestive "Quotations."

"....The enclosed $25 I wish you to invest securely at 6 per cent, and for the annual interest, send the *American Agriculturist* during the next 33 YEARS, to my nephew and namesake, who has begun farming in —, Iowa, or to his widow or children after him, and in 1910, A. D., pay the principal over to the survivors. You see I have full faith that the paper will go on another 33 years just as it has in the past, and I wish to avoid annual renewals, and oversight on my part. From my own experience, I believe your paper will be worth thousands of dollars to him in the end, if his life is spared. Single hints I have gained in reading it, that made no strong impression upon me at the time, have started trains of thought and investigation that have been worth to me more than the cost of your paper for five hundred years ...."

"... I am a Wisconsin farmer, 61 years old, and five years ago I scouted the idea of 'book farming,' but was over-persuaded by my children to try the *American Agriculturist* for a year. I have got so many good ideas from its common-sense reading, that I would not be without it for five or ten times, nor twenty times its cost. The enclosed $1.60 is part of what I got from a load of potatoes hauled 12 miles and sold at 25 cents a bushel. I would not have missed renewing my subscription if it had taken the whole load ...."

"....Though working ten hours a day in a factory, I have a little plot of 50 x 60 feet behind the house, which almost solely by the aid of the *American Agriculturist*, I have cultivated myself, nights and mornings, and wife figures up a saving in grocer's bills of $35 in the *nice* and *fresh* vegetables we have raised. The plot was a mass of weeds, until I subscribed for your paper, to oblige a young lad who was raising a club to get a premium sewing machine for a soldier's widow...."

"....I am only a 'village parson,' but I read the *American Agriculturist* regularly, not only for the help it gives me in my garden plot, but by keeping up with what is going on, and studying the new ideas you give, I am able to talk intelligently with my rural parishioners when I meet them at work on their farms, and not unfrequently give them hints which they put into profitable practice....Those who joined the club I sent you two years ago to get the premium melodeon for our S. S. room, all show the good results of 'reading and thinking about their business'...."

"....For the enclosed $5.40 send four copies of the *American Agriculturist*, post-paid, all to me. Last year I kept one copy in my store, fastened to the counter by a string, and it was thoroughly worn out long before the next number came, by those customers who dropped in of an evening and took turns at reading it. This one copy has done a heap of good in stopping idle gossip, by leading callers to talk about some useful thing seen in the paper. I know many a man has carried home useful ideas. For the next year I shall have *four* copies in as many different places in the store. I can't do more good in any other way with a 'V'...."

"....Your multitude of suggestions about housework, care of children, etc., have been of great value and comfort to me. I would sacrifice almost anything else, rather than be without them. I wish every other mother in the land, and those who are to hereafter fill such a place, would take and read the *American Agriculturist*...."

"....I would not have my boys without the illustrations and descriptions given in the *American Agriculturist*, if the paper cost ten times as much. It sets them to thinking and reasoning, and attaches them to their work...."

We could add a multitude more of like character.

The Wheat Crop in England.—Mr. Lawes, of Rothamstead, England, whose estimates have heretofore been singularly accurate, figures up the quantity of imported wheat that will be needed by the English people before next harvest as 13.666,000 quarters, or about 110 millions of bushels. To provide this enormous quantity will draw heavily upon the chief granaries of the world, of which ours is the most available.

The Beauties of our Patent Laws.—A correspondent from Hudson, N. Y., inquires if he is legally liable to pay a patent right fee on an ice house or ice closet supplied with a ventilator. Now this is a difficult question to answer. We know that there is a certain patent on ventilating refrigerators, or ice chambers, but we cannot see that this can affect an ice house which may be provided with a ventilator. There are so many patents granted for trifling, and even old and obsolete contrivances, that one can hardly use anything without the risk of infringing a patent. Possibly the most absurd illustration of this, is the fact that a patent has recently been granted for a shirt made with unfinished sleeves and other parts, these less important parts being supplied by the purchaser of the unfinished garment. Any mother then who should make such an unfinished garment for her married son, and send it to her daughter-in law to finish, would infringe this patent, and might make herself and her son liable to damages. In the case of the ice-house, it would be the least trouble to pay the fee demanded, as it would probably cost more to employ a lawyer to look into the matter than the amount of the fee.

Inflamed Udder.—"L. D.," Lonsdale, R. I. To relieve an inflamed udder it should be well bathed and fomented with warm water, several times a day. If there is difficulty in drawing the milk, a solution of carbonate of soda or saleratus should be injected with a common syringe into the teat, and milked out again repeatedly, until the milk comes freely. The alkaline solution dissolves any milk that may have clotted in the udder, and which stops the flow. This relieves the inflammation, which is greatly increased by the absorption of the milk in the diseased glands.

Inversion of the Uterus.—"Alfd. B. H.," Louisville. The inversion of the uterus or womb in a newly calved cow, is not unfrequent. There are several causes. The principal one is weakness of the supporting ligatures, which are not able to resist the severe contractions which follow the birth of the calf, and the whole organ is inverted and expelled. In such a case the womb should be washed with warm water and be returned without loss of time; a bandage with a sufficient opening to allow the urine to pass, should then be applied, and the cow placed on a floor which slopes forwards. One ounce of tincture of opium should then be given, to allay spasmodic action if this were feared. Delay in returning the organ, or any injury to the parts by dogs, would be certainly fatal. The womb may be amputated safely by a skillful surgeon, if it fails to be retained, and the animal's life saved. Upon the surface of the uterus there are numerous glands, which secrete an abundant glairy mucus at the time of parturition. These are sometimes enlarged, and appear as small tumors. It is possible that the tumors referred to were really these glands.

Sundry Humbugs.

Our friend F. K. Phoenix, (who will excuse us for putting his name at the head of a humbug column, but he can stand it), writes in commendation of our opposition to swindlers and humbugs. Besides managing one of the most extensive nurseries in the country, at Bloomington, Ill., Mr. Phoenix finds time to give thought to the various social problems, and is always found in the first rank in every cause of reform. He thinks that the suppression of swindles may be materially aided by looking into the causes, and says: "The two immediate parties to every fraud are, 1. The *guller*, 2. the *gull*. To these we must add as really the most responsible of all, party number 3.—The great public, which knowingly tolerates gullers, gulls, and gull-traps, the whole country over."—His view is that public opinion is wrong, and were this set right, the whole tribe of frauds could at once be crushed out. His next step is to inquire, "why is public opinion wrong—what makes or regulates public opinion?—To say that education does, is true, but too indefinite. Let us rather say; 1, religion, 2, politics, and 3, the business of the country. Then to fight fraud successfully, let us go to the fountain head, and humbly and faithfully seek to purge out the popular errors in American religion, politics, and business. I believe this to be to-day our highest privilege, and the best paying investment for the American farmer."....It is interesting to know the views of a long time reformer like Mr. Phoenix, but he lays out altogether too large a job for us, and we must leave the errors in "religion, politics, and business" to others, and keep on in the humble way in trying to show not only the "American farmer," but the great circle of readers of the *American Agriculturist*, "the ways which are dark," and therefore to be avoided. While we present the pecuniary loss which follows in the train of every species of humbug, we have endeavored not to neglect the moral aspect of the matter, and to show the unhappy effects upon the community of the various swindling schemes. Taking Mr. Phoenix's own view, that it is the duty of the "American farmer" to reform "religion, politics, and business," we get a step nearer the first cause than he does, for we have the ear of the farmer himself, and many others besides ... Among the many attractive forms in which humbug presents itself, is that of

INHERITANCES IN ENGLAND,

and there are chaps on the other side who are quite as "cute" as any of our own swindlers, who make a business of securing the claims of heirs upon property there, which if their stories are to be believed, is actually going a begging, for the want of its rightful owner to come and take it. These chaps advertise in our papers, that a party by the name of Tompkins, Jones, or some other, has died, leaving a large unsettled estate, "for further particulars address, Bland-ribass & Co., Cannon street, London." One Tompkins who lives in Indiana or Pennsylvania, has heard that his great-grandfather came from England, and thinks that now his chance has come; he writes to Blandribass & Co., who, perhaps, by the same steamer get a hundred other letters from other Tompkinses all over the country. B. & Co. reply that they must first have a search; that is not in their line of business, but nothing can be done unless the searcher's fee, always some moderate sum, such as $20 or $30, is forwarded. The various Tompkinses each thinks, this isn't much to venture, and send the money. B. & Co. thus get a handsome income, and if those who send money get any reply at all, it is to the effect that *they* are not Tompkinses of the line in which the estate descends. In some cases this matter of looking up inheritances has assumed considerable importance, and meetings of the descendants of a certain "one of three brothers" who came over in 17— and something, have been called, and much money collected and expended in sending a special agent to Europe; we have known of several cases of this kind, but never heard of any instance in which the anticipated millions were distributed among the heirs. These

cases, however, stand upon a different footing from those downright swindles of the class of Blunderbuss & Co.

"THE GREAT AMERICAN LITERARY ASSOCIATION"

of Ohio, proposes to "furnish applicants on short notice with all kinds, styles, and grades of literary exercises, consisting of essays, lectures, orations, sermons, salutatories, valedictories," and much more. Those connected with the "Association" are graduates, and "having gone through 'the mill,' know just what kind of exercises students need and desire."—While we have no reason to doubt that this "Great American" concern will do as it agrees to, it deserves a place in the humbug column, as an accessory to the meanest kind of fraud. A "lunkhead" at college, whose parents furnish him with plenty of money, but no brains, can send to this shop for "orations, essays, lectures, etc., intended for Commencements, Anniversaries, Contests, and Society Meetings," for "they know just what kind of exercises students need and desire."—The class dunce with money, can strut in borrowed plumes, and perhaps take precedence of the honest, hardworking student, whose performance may not be so brilliant, but it is his own. If it were not for advertising this aider and abettor of getting literary credit under false pretenses, we should give its location, and express to the president and faculty of the college in the same town, our regrets that such a literary nuisance exists in their vicinity. The concern thanks the various persons, including "ministers of the gospel," who have "patronized us so extensively," which we regard as a libel upon a class of hard-working men, and we hope there is not a minister of the gospel in the country capable of the practical lie of buying a sermon at this "Great American" shop, and standing up before his people and preaching it as his own. ...The various subjects upon which our advice is asked in the course of a year would make an amusing catalogue; we probably have more in relation to change of location for farming than on any other topic; but those about going into business of all kinds, especially the purchase of certain patents, are numerous, and it is not unusual for our advice to be asked in regard to mining.

BE CAREFUL WHAT YOU SIGN.

In former articles we have exposed the swindle of pretended venders of mowers and other agricultural implements, who show samples and take orders; they ask the farmer to sign an agreement to take the article when delivered, at a certain price; he unthinkingly does so, and in 30 or 60 days receives a notice from the bank in the next town that his note for a certain sum falls due on a given date: the astonished farmer, upon investigating the matter, finds that the bank has his note in due form, and signed by himself. The "agreement" was so ingeniously arranged, that cutting off an inch or two from the end, left a regular promissory note. Of late we have complaints that operators in some kind of a "fire-proof roofing" have been playing the same game in some parts of the country. Let every one be careful what he signs; in a transaction of this kind, there is no need of signing anything. If thought desirable to buy an article in this way, if your word, in the presence of witnesses if need be, is not sufficient, let the vender go his way; if he is really honest, and wishes to make a trade, he can easily satisfy himself of your responsibility. The number of

WALL STREET OPERATORS,

who are advertising all through the country and Canada, seems to be on the increase, and they must be doing a fair business to pay for their paper and printing; they are fairly flooding the country with all sorts of documents, from a simple card or circular, up to reviews and treatises on money making. A large number of letters of inquiry are at hand, some requesting us to show up this or that firm as humbugs, and others ask if it will be safe to send money to some particular firm as an investment. The whole matter is surrounded by difficulties, as there are brokers in good standing, who advertise to operate for persons at a distance; at the same time, there are others of no standing at all, who make a great flourish of advertisements and circulars, and this class no doubt includes some downright rogues, who take advantage of the fact that much interest has been created in the country at large in Wall street operations, to carry on a regular scheme of swindling. We find it very difficult to get any positive information in regard to the various parties who are making themselves so prominently known throughout the country by the great inducements they offer. It is not our custom to write down a person—or a firm—as dangerous, unless we have positive proof of our statements. As yet, the matter is undeveloped; those persons who have been swindled in operations of this kind, "pocket the loss," and keep quiet about it; they think that they will forfeit their reputation for shrewdness if they let it be known that they have, even by proxy, been "on the street" and lost. We can at present only speak of the matter in general terms. These persons who advertise so loudly are, to say the least, not among the best known brokers in Wall street; they are *not*, so far as we have inquired, members of the regular "Board of Brokers." Even the best brokers, and the men best known on "the street" for their thorough knowledge of all its "ins and outs," the shrewdest and longest headed, often make serious and disastrous failures. Moreover, and mark this. If a person in regular mercantile business is known to be "dabbling in stocks," his credit is at once impaired, both at bank and in the line of trade in which he is engaged. If a business man, usually regarded as prosperous, suddenly makes a bad failure, and the statement of his affairs offers a bad show for his creditors, the remark is likely to be, "He has been on Wall street." It is well known to business men, that a very large proportion of the bad failures that have taken place in New York of late years, have been due to the fact that the person, or in case of a firm, some member of it, has been engaged in Wall street, or other speculations outside of their legitimate business. The fact is, that a large share of stock operations are, when divested of all externals, nothing more or less than gambling, and they are regarded as such by the solid portion of the business community. So far as we have seen and understand the circulars with which these Wall street brokers are loading the mails, they are invitations to participate in stock gambling. To the many who have written us letters of inquiry in regard to this matter, we cannot do better than repeat the well known dialogue between the farmer and his son, who were engaged in hoeing corn: *Son*, "Father, the fish will bite right sharp this afternoon." *Father*, "Yes, my son, but if you keep on hoeing corn they won't bite *you*."....There are many who inquire about the extensively advertised

GENERAL AVERAGE SALES,

which have before been described; it is a sort of prize package lottery over again. If any are foolish enough to believe that through this or any other machinery, the runners of the machine will give a dollar's *worth* of anything for 50 cents, they have a poor knowledge of the world, and can only be taught better in the school of experience.

QUEER, OR COUNTERFEIT MONEY

dealers are still at work. They have improved in the style of their circulars, but use so many different names and addresses, that it is of no use to keep the run of them. Those who can be caught by these dealers are as big rascals as they are, and it is useless to waste time and space in warning persons against that which it requires *two parties* to make a crime of. Ever since greenbacks were first issued, this offering for sale—for there is no selling—of counterfeits has been going on, and though we have given a full history of the matter from the beginning, and there has been hardly a month passed without some allusion to it, there are still persons to whom this best known of humbugs is a novelty. We frequently receive letters from excellent persons who are highly indignant that they should be the recipient of such a proposition, and write us in hot haste to show such a man up as "a bad character," while we may have 20 of self-same circular, with a different card in each. The good, honest man who writes in this way does not know that his name is on a list, collected in one way or another in his town, which is for sale to every scamp who wishes to send out circulars for any purpose whatever.

MEDICAL MATTERS,

though they present little novelty, appear to be "looking up," as the market reports say, and the old and familiar humbugs seem to show signs of activity. The various methods taken by quacks to bring themselves to notice, show great ingenuity on their part, but what shall we say of corporations and papers which lend themselves to such uses? The great Erie Railway allows its depots to be used as distributing points for the circulars of one of these advertising "Doctors," and the "Dutchess Farmer" issues a 4-page supplement in the interest of another, who modestly calls himself "undoubtedly the most successful physician living, and has been during the past 16 years." These phenomenon do not often live long, but this one has stood it for 16 years, and may reach manhood if he keeps on....Our exposures of humbugs bring us more or less of annoyance, more especially the medical ones; but it is gratifying to know that our warnings are productive of good, as we often learn from unexpected quarters. A lady in Louisiana writes: "A friend of mine (who now reads the *American Agriculturist*), says she is angry with herself, every time she thinks of sewing to make money to buy 'Old Mother Noble' for an invalid husband; and who, since he has quit taking so much physic, is now a healthy man. B——s Cordial is all the rage here now, but my children have never taken a dose of patent medicine in their lives." That is right, Mrs. T., never give your children, or take yourself, any stuff whatever, the composition of which you do not know all about....The "Centennial Year" is likely to be made a harvest one by the "swindling fraternity;" we are "sharpening our stick" anew, and shall take as much care as possible, that the readers of the *American Agriculturist* are duly warned against humbugging schemes of every kind.

Patent Corn-Dropper.—"E. W. W.," Caroline Co., Md. There are several hand machines, for dropping corn and covering it at the same time, that have been patented and are in common use in the west.

A Suckling Squash, which may beat "the squash in harness." A Boston paper says: "A farmer at Orrington, Me., has been for some time feeding a squash, in the hope of being able to bring it up to 200 pounds. The feeding is done by cutting off the vine about six feet from the squash, and placing the end in a pan into which fresh milk is daily poured. By this means the vine absorbs about two quarts of milk per day, and the squash gains about a pound a day in weight." It does not say which end of the vine is cut off. If the butt end, this might be fastened directly to the teat by an india-rubber attachment, the vine trained over the cow's back, with the growing squash secured between the horns. The squash should somehow be fed on eggs with the milk, and thus furnish "pumpkin" pies ready grown."

Averill's Chemical Paint was of course intended when last month we had it "Avery's." The Chemical Paint is so generally and favorably known as Averill's, that no harm can result from the slip of the pen.

Butter, Egg, and Fruit-preserving Processes.—Several circulars offering to sell recipes, or the articles for preserving butter, eggs, and fruit, have been sent for an opinion, but as these date from some far distant localities, we are unable to investigate them. It may be that some "Butter Restorative" will render rancid butter sweet, but we should prefer to go without butter, which we always do, unless the article is good, to eating this restored product. The claims of some of the egg-preservatives do not look unreasonable, for by any one of several methods of closing the pores of the shell, eggs may be kept for several months....As we do not know the composition of the fruit-preserving powder exhibited at the St. Louis Fair, we cannot answer the questions of a correspondent. We know that a fruit-preserving powder was made in New York several years ago, which gave satisfactory results, and apparently a harmless addition to the fruit.

Youmans' New Chemistry, by Prof. E. L. Youmans. N. Y.: D. Appleton & Co. When the previous edition of this work appeared in 1863, we commended it at the time as the only popular work which gave the student a glimpse of the newer views of chemists, and the modification which the old theories were undergoing. The present edition keeps up with the most advanced state of the science. As the author says, it is not intended as a hand-book for the laboratory, or a manual for special students in chemistry, but to give such an outline of the leading principles and most important facts of the science as shall meet the wants of the higher schools, and those persons who would have that acquaintance with the subject which is a necessary part of a liberal education. We do not know where the modern views are so compactly and clearly presented as in this little volume. That wonderful aid to modern chemical research, the Spectroscope, is popularly explained in a very full and abundantly illustrated chapter on spectrum analysis, and the later views on heat, and other physical agents which have so close a relation to chemistry, are introduced. The mechanical appearance of the work in paper, type, and engravings, is excellent.

Rain Guage.—"J. J. L.," Turner's Falls, Mass. A rain guage was described and illustrated in the *American Agriculturist* for June, 1873. It consists of a receptacle of a certain area of surface, in which the rain is collected as it falls. The rain is conveyed into a reservoir—closed so as to prevent evaporation—and of the same, or some readily calculated proportionate, area as the receptacle, in which the depth of water serves to denote the amount that has fallen.

A Cement Roof.—"J. M. R.," Camptown, Pa. For a cement roof the roof boards should be laid as usual, but the roof should have but little slope. The boards should be well seasoned and laid close. Lath should be nailed across the boards to furnish a hold for the cement, or broad headed nails should be driven in, leaving half an inch and the head projecting. Cement mixed with three times its bulk of fine clean sand, may be laid upon the roof, and a "floating" coat laid for a finish. When dry, thoroughly saturate the roof with hot gas tar. This makes a fire-proof and durable roof.

Feeding Stock upon a Wheat Field.—"E. C.," Huntington, O. It would be of no advantage to the wheat, but probably an injury, to herd and feed stock upon it during the winter. It would be far better to feed the stock in a yard, and save the manure to spread it upon the wheat in spring, or even during the winter, although the former would be preferable.

Nebraska.—Those who are interested in the progress of this flourishing western state, or who are attracted to its fertile and beautiful prairies in search of a home, will be greatly interested in reading a book written by Mr. Edwin A. Curley, entitled, "Nebraska, its resources, its advantages and its drawbacks," and published by the American News Co. Mr. Curley came to this country as the special commissioner of the "London Field," to examine our "emigrant fields," and to report thereon. The advantages of our western country were so conspicuous, that Mr. Curley was compelled in justice thereto, to extend his report in the form of a book, in which his very thorough examination of the country could be exhaustively treated. His book contains a description of the soil, surface, climate, grasses, fruits, and trees, with maps of every county, showing every section, road, village, town, post-office, and mail route in the state. He also gives much statistical information with figures relative to the profits of farming and stock growing from actual accounts of persons who are, and have been for some years, engaged in the business. For those who propose to find a home in the west, this will furnish a very valuable hand-book. One of its chiefly valuable points is that the drawbacks of the country, such as they are, are honestly set forth.

The So-called Hog Cholera.—The present season has been very fatal to many of the western hogs. A large portion of many herds have been carried off by what is known as hog cholera. The disease is so virulent that before any course of treatment can be determined on, it has run its course, and in the majority of cases, most of the herd is lost. Treatment is either of no avail whatever, or if the animal recovers, it is left in such a wretched condition, paralyzed, rheumatic and emaciated, that it is of less value than the cost of restoration. It is therefore necessary to consider how to prevent the "hog cholera," rather than how to treat it. The disease is closely related to the so-called Texan fever, or splenic apoplexy of cattle, and on examining a a dead hog, the spleen is found gorged with black blood, soft, and greatly enlarged. Sometimes it takes the form of carbuncular erysipelas, or the black leg of cattle, the legs breaking out in sores. It is a true case of blood poisoning, that results in a fever which may be called typhoid, enteric or intestinal, or anthrax, as persons may choose. The disease can be prevented, but can hardly be cured. It is most common in low, undrained, marshy places; or where the hogs are kept in filthy pens, and have to drink water fouled with their own evacuations. From these it spreads to other quarters where it would not originate. Sanitary measures, good food, pure water, clean quarters, and the regular removal of the droppings, and the abolition of the disgusting practice of permitting hogs "to follow cattle," and consume their excrement, would doubtless entirely prevent it. The most economical thing in stock keeping is humanity, and such measures as would preserve the health of the owners themselves, would immediately remove their stock from the danger of the virulent diseases which now decimate them.

Basket Items continued on page 477.

Emerson's Trees and Shrubs of Massachusetts.

A report on the Trees and Shrubs growing naturally in the forests of Massachusetts. Originally published agreeably to an order of the Legislature by the Commissioners on the Zoological and Botanical Survey of the State. By GEORGE B. EMERSON. Second edition, published by Little, Brown, & Co., Boston, 1875, 2 volumes, 8vo., with 146 plates), is a work likely to interest agricultural people, and all who plant or love trees. The ground, or we should rather say, the forest it covers, is, to be sure, not so wide as the circulation of the *American Agriculturist*, yet the trees and shrubs of Massachusetts are mainly those of the whole northern states, and many of the southern, although these may boast of many besides. But in what other district of the country, Pennsylvania excepted, have they had so good a historian? The first edition, published thirty years ago, was a single volume. The second is in two, of equal size, the enlargement mainly owing to the plates, which have been added with a lavish hand, all of them good, the colored ones especially full of truth and beauty, and paper and typography combine to make the work as attractive as it is substantially useful. The original volume was published by the state, and had for its companion, the late Dr. Harris' celebrated Report upon Insects Injurious to Vegetation. This was reprinted by the state several years ago, and illustrations added. The same course would probably soon have been followed with the Report on Trees and Shrubs, had not the author himself determined to take it in hand at his own charges, for which he can hardly expect pecuniary reimbursement, at least in his day. But he will have a reward, to him far more valuable, if haply his instructions and pleadings cause two trees to grow where only one, if any, grew before, and if his interesting descriptions make our native trees and shrubs more generally and familiarly known to those who live among and near them. He says in his original preface:

"A point with which I have each year been more and more struck is the beauty of our native trees, and of the climbing vines and undergrowth associated with them. I have thrown aside much which I had written upon this point. Utilitarian readers will perhaps find too much still retained. My apology for not pruning more severely must be found in my sincere conviction, that associations with the beauty of trees about our country homes enter deeply into the best elements of our character; and in the hope that what I have written may induce some of my readers to plant trees for the purpose of increasing the beauty and the appearance of seclusion and quiet of the homes of their wives and children."

Let us venture upon another quotation: "I shall always esteem it one of the best fruits of my labors in this survey, that they have brought me better acquainted than I otherwise could have been, with the intelligence, hospitality, and good and kind manners of the common people in every part of the state. If there are better manners and a higher intelligence among the people in other countries, I should like to travel amongst them; but I very much doubt whether in any country on which the sun shines, there are amongst the people in common life, more of those qualities which are always pleasant to meet with, delightful to remember, and most honorable to our common humanity to record, than are found among the independent mechanics and yeomanry of Massachusetts." We trust that the eulogy is still deserved, and is applicable over the whole breadth of our country.

The part of the preface written for this edition, as well as the introductory chapter on the uses of forests, their continuation, improvement, and management, opens up a variety of topics of much practical interest, and some mooted questions as to the effect of the destruction or the renewal of forests upon the climate, and in particular upon the distribution of summer rains. These subjects, treated by our author with discretion, and with a practical view, are too large to be entered upon here, and when they are touched, need somewhat particular handling. In a recent issue, while alluding to the undoubted benefits of forests, as reservoirs of moisture and preventive of floods, as moderators of extremes of heat and cold, and barriers against winds, we remarked that the fall of rain is governed by the course of the winds, and that this depends upon causes which are not bounded by small areas, but operate very widely. The good, therefore, that may in this regard be reasonably expected from planting, or the evil produced by cutting away forest growth, must relate mainly to summer rain in regions where that is precarious, to the local showers which we see are often more or less affected by the configuration of the land, and apparently also by the nature of its covering. On the other hand, some one has recently called attention to the fact that "the magnificent forests found from Minnesota to Maine, have a rain-fall precisely identical with that of the nearly treeless prairies west of Chicago, viz: 28 to 40 inches," and inferred from this and like instances, that the supposed relation between woodlands and rainfall was grounded only upon "dogmatic theorizing." As if there could be forests where rain was wanting, and as if there were not other causes of local treelessness than want of rain. As if, moreover, the season in which rain fell or failed were not important, as well as its amount. The extension of our great western unwooded region eastward, in patches, into a district of apparently sufficient summer rain, has been difficult to account for, no doubt, but explanations are not wanting.

Returning to our volumes, we note that Mr. Emerson has added to this edition a copious selection of "figures of allied European trees as they grow in their native forests," thus giving "better than in any other way, some conception of what will be the appearance of our trees when they shall have been cultivated in large numbers. The best old trees of all our native kinds, have been long ago destroyed. Our ancestors have had no reverence for trees. All the grandest and most beautiful have long ago been sacrificed. I have seen in an hour's drive more numerous and finer trees in various parts of England than I have seen, excepting the American Elm alone, in all New England." One good reason for this is, that our country has not been settled long enough to have really magnificent and picturesque old trees. All this part of the country was forest-clad, thanks to sufficient rain distributed through the year, and dense forest growth is fatal to individual tree-development, except in hight. Nor, as our author elsewhere well explains, could any of our primeval trees have stood alone, even if our woodchopping forefathers had spared them as specimens. In due time, those who come after us may have noble and venerable trees of open growth to show, not inferior to those of the ancient parks and roomy woods of England.

As respects European trees, we call attention to an observation in Mr. Emerson's preface. He says: "I have been cultivating, without special care, for more than twenty years, on land excessively poor and exposed to all the winds, a few rods from Boston Bay, all the varieties of the English Oak, Beech, Birch, Linden, Maple, Elm, Ash, Mountain Ash, and Pine; and I find them more hardy than the corresponding American trees, with a single exception,"—that exception being the "Canoe Birch, which grows equally well with the beautiful European Birch." It should be noted that this observation relates only to a bleak position on the New England coast, where "Rock Maple can with difficulty be made to live."

The plates representing the Massachusetts trees and shrubs, are all from original drawings by Isaac Sprague. When that is said, it is unnecessary to praise them, for in neat and accurate delineation he has no superior. The plates which he contributed to the first edition, here reproduced, are interesting as being almost his first work of the kind. He has now contributed many more, some of them in outline, representing foliage, flowers, and fruit, many in colors, and these are admirable specimens of chromo-lithography. Whether this is any cheaper than hand-coloring, we are in doubt, but it is certainly better, and indeed it leaves nothing to be desired. Not only the New England trees are illustrated, but a large number of the shrubs. With liberal interpretation even the May-flower. (*Epigæa*), shows its delicate rosy blossoms, and the Cranberry its much prized fruit, and all the New England Blueberries and Huckleberries are represented to the life. Advantage is taken of the late ripening of many fruits, as of the late flowering of Witch-Hazel, to display the autumn coloring of foliage.

The descriptions are sufficiently botanical for scientific accuracy, sufficiently plain and popular for ready comprehension by any intelligent reader. Altogether, for beauty and for use, it is a book to have, and to be proud of.

A. GRAY.

Bee Notes.

BY L. C. ROOT, MOHAWK, N. Y.

Bees are now snugly packed away, and only need perfect quiet, and a proper temperature... See that all surplus combs are secure from rats and mice, and in a place where they may be thoroughly frozen, in order to destroy all the eggs of the moth or miller. Preserve all pieces of comb that will answer for use, either as guides in boxes, or in frames for extracting. Even old drone comb is valuable for the last named purpose....All worthless pieces of comb and the cappings removed from combs when extracting, should be made into wax....Decide upon what hive is to be used the coming season, and get a sufficient number ready during the winter months.

Mr. J. H. Parsons, Franklin Co., N. Y., asks: "What is the proper size for a hive?"—Let it be large enough to accommodate the size of the swarm. I like the Quinby hive, because it can be adapted to any number of combs, and consequently to a swarm of any size. It is all important, especially in the spring, that the size of the brood chamber corresponds to the number of bees that are to occupy it. Mr. P. also asks "if a piece crossing the frame through the center would not be beneficial?"—The subject of frames and their construction is one of much importance, and it is proposed to make it the subject of Bee Notes for January. He asks again "How to strain honey?"—It is a difficult matter to remove honey from the comb in cold weather. It may be readily taken from almost any comb by use of the extractor, if done at the proper season, and the comb be saved. Again he asks "Will bees make more honey in large than small boxes?"—The proportion stored will be greatest in large boxes.

Those who winter bees where they do not have the benefit of artificial heat, should bear in mind that not only a warm atmosphere is necessary, but that it must be *dry* as well as warm. I mention a case in point. Many practice wintering in what is known as a *clamp*, made partly under ground and covered with earth. I saw the working of one of these clamps the past winter, and watched it with interest. It was carefully prepared, and when completed, a stove was placed in it, and a fire kept up until it was very dry. The stove was then removed and the bees packed in the clamp for winter. About two months later the inside of the clamp was found to be covered with mold. The frames and combs were also somewhat moldy, and I am satisfied that if prompt action had not been taken, the loss must have been heavy. A small stove was placed upon a plank above the bees, in which an occasional fire was made, when it all became dry. The objection to this method is that the bees were too much disturbed. It would be much better to make a small ante-room for the stove, and let the pipe pass through the room which contains the bees.

To Our Readers.

This number closes the present year, and with it, our *Thirty-fourth Annual Volume.* We begin work at once on Volume XXXV, for the Centennial Year!....No Valedictory words are needed. Nearly all of our readers go right on, from year to year, many of them having taken this paper regularly for a third of a century; and many more are continuing the subscriptions begun by their fathers—begun in not a few instances before they themselves were born.—Probably not one in ten of the original subscribers is now living. "Deceased," is registered against a multitude of names of our friends, that in the passing years have been recorded on our books. How few, indeed, of the generation of toilers and thinkers of twenty and thirty years ago, are now remaining. Happy will it be for us, if we all so live, every year, and every day, that when our turn comes to go hence, it shall be "well with us," and our record be one full of sweet memories to those we leave behind.

Need we speak here of our own editorial work and plans for the coming year? Will not the past, and the fact that "*Excelsior*" is our "motto," and that the "Centennial year" itself will be a stimulant to extra exertions, be quite sufficient?

We hope to part company with no present reader. If any contemplate dropping out of the family relationship, which we strive to feel and act upon as existing between ourselves and all our readers, we shall be sorry to lose their company at the beginning of the New Era. We trust our own past work has furnished no reason for any such partings.

We cordially invite every one to remain with us, and we promise to spare no time, no effort, and no expense, to make the future of the *American Agriculturist* much *better than the past*, and every year's added experience aids us in this work.

From those who approve our work, we ask as a favor, that they will invite other friends and neighbors to join our company. Will it not be a pleasure to each one of our readers to bring along one, two, three, or more—*at least one*—to begin with us the new National Century? It will be a favor appreciated by us, while every addition to the number of subscribers gives us increased facilities for doing better for all.

One other favor we especially ask at this time. The work of re-entering names, and making out new books, is immense, and it is always largely crowded into a few days about Jan. 1st. If our readers will, on the reception of this number, AT ONCE RENEW THEIR SUBSCRIPTIONS, and send in such new names as they have secured, it will very greatly facilitate our work, and enable our old and experienced clerks to enter and arrange the names promptly. *So far as possible, please accommodate us in this respect.*

*** To those who take the trouble to receive or collect other subscriptions, and forward them, the Publishers offer liberal rewards in the form of *valuable* Premium articles, as noted on page 477.

The Conn. State Board of Agriculture will hold its Winter Meeting for Lectures and Discourses at West Winsted, Dec. 15, 16, and 17. Subjects, "Laying out and Fencing Farms," "Farm and Country Roads," "Farm Houses and Farm Buildings," and other kindred topics. For full programme address T. S. Gold, Secretary, West Cornwall, Conn.

The Georgia State Fair

Was held at Macon, during the week beginning Oct. 18, and it was our good fortune to be present on this occasion. We do not visit fairs for the purpose of reporting them, it being impracticable with the limits of a monthly to give anything like an extended account of the various fairs visited each year by the different members of our editorial staff. They are visited for our own instruction, and at each one we gather materials which may not be used until months afterwards, believing that we better serve our readers by this course than if we were to publish a list of the prize animals, machinery, and other things exhibited. This fair of the Georgia Society was an interesting one, for the reason that they had determined to do without the ever-attractive and noble animal, the trotting horse. Fine horses were exhibited, and tested, but the regular horse race was left out, much to the disgust of that class who regard the horse and the chances of betting as the great end of an agricultural fair. It requires even more courage to omit a horse race in a southern than in a northern fair, as in the southern states the horse is even more popular than elsewhere, and in the sparsely settled portions much more in use than with us. The horse interest did its best to make the fair a failure, and the papers in other parts of the state published the statement that it was unsuccessful before it was fairly under way. We are glad to say that when we left, two days before the fair closed, the receipts were such as to satisfy the managers that the exhibition was not a pecuniary failure. The fair grounds, used at other times by the citizens of Macon as a park, are vastly superior to any that we have seen elsewhere; a large tract of land, directly upon the Ocmulgee River, and of easy access from the city, is in one portion a handsome park, with good lawns, fine forest trees, lakes, fountains, flower-beds, and other decorations, while the other is amply provided with fine and substantial buildings for the purposes of the fair. Aside from the large structures devoted to machinery, manufactures, floral hall, and others, the smaller buildings, such as the President's Office, Editors' Home, Ladies Cottage, etc., are very remarkable for their excellent taste and appropriateness. Despite the croaking of the disappointed horsemen, the fair was a success, and in many respects, notably fine. The array of farm machinery was very large and varied, and of course strong in the implements most demanded by southern agriculture. Plows, sweeps and scooters of kinds never seen on a northern farm, were here in great numbers; cotton gins were in full force, and when all were in operation, presented a beautiful sight as they threw the lint in snow-like flakes into the gauze covered chambers placed to receive it. Distributors of fertilizers and cotton planters of Georgia invention attracted deserved notice; and we do not recollect to have seen anywhere else so large a display of agricultural steam engines, in operation, doing work of various kinds. The machinery department was not only very full, but it attracted a large crowd of intelligent and inquiring visitors. The poultry show was specially worthy of notice. We have seen nowhere else, not even at regular poultry shows, such a fine arrangement of coops, of two uniform patterns, arranged in single tiers, at the proper hight, all calculated to display the fowls to the best advantage. The birds were very fine. But we cannot particularize; suffice it to say that the show of cattle, sheep, and swine was not remarkable; some fine horses were exhibited; the plowing match was a great success, and attracted much attention; the halls for domestic and other manufactures were well filled with various products, some of them exceedingly creditable. It struck us as an encouraging feature, that every one took great pride in any new branch of home industry, and our attention was frequently called to this or that article as of "Georgia" manufacture. In horticultural products the show was greatly diminished by an unfavorable season, though there was much of interest exhibited. Some of the Granges made exceedingly creditable exhibitions, including farm, garden, and household matters, in short all that was produced in the community. An exhibition which much interested us, was one of the various natural productions of the state, including the various forage and textile plants, and all the native plants known to be useful, with some regarded as injurious; this was gathered by Dr. Stotesbury, of Clinch Co. Another unpretending, but valuable collection, was an immense number of soils from the various parts of the state, which have been, or are to be, analyzed; this was prepared under the direction of Dr. Thomas P. Janes, the efficient Commissioner of Agriculture for the State, who also had on exhibition samples of all the fertilizers offered for sale in the state, with their analysis and intrinsic value plainly given with each sample—an exhibition which was of the greatest importance to farmers, and we doubt if its like has been before seen at a state fair. We might enumerate other striking points, but after all, the most interesting part of the fair to us was the people with whom we came in contact, and the spirit which prevailed. The fact is, these Georgia agriculturists mean business, and they are thoroughly wide awake to the fact that the future success of the state depends upon improved agriculture, and that this implies work, and they are, to a most gratifying degree, on the lookout for every improvement which shall lessen the cost of production of their crops, or which shall increase their home comforts. The State Agricultural Society is in the right hands, and with such a gentleman as General Colquitt for its President; such an omnipresent worker as Mr. Malcolm Johnson for its Secretary, with an executive committee of the most sterling men in the state, it must do a good work, and tell most favorably upon the future prosperity of Georgia.

The Agricultural Experiment Station.

The Conn. "AGRICULTURAL EXPERIMENT STATION," at the Wesleyan University, at Middletown, though established and mainly supported as a State Institution, and for the benefit of Connecticut Farmers, will, in its work and investigations, be of general interest and utility to the whole country; and we shall, from time to time, gather therefrom useful information for our readers, not only in Connecticut, but elsewhere. Those having the Station in charge, have been making careful preparation for the work, which is now organized and in progress. Dr. W. O. ATWATER, Ph.D., professor of chemistry in the University, has general charge as Director. Dr. W. C. TILDEN, formerly chemist to the U. S. Agricultural Department, and later Professor of Chemistry in Howard University, at Washington, D. C., has accepted the position of Chemist to the Experiment Station. Provision is made for at least two assistant chemists, and Mr. Balentine, a graduate of the Maine State Agricultural College, is already engaged and at work. It is hoped to soon have another assistant direct from one of the leading German Agr. Experiment Stations.

In response to an invitation from the Trustees of the University, the Conn. State Board of Agriculture, and the Farmers' General State Committee on Experiment Stations, gathered at Middletown, on October 12th, to consult as to the policy and work of the Station. During a very pleasant and harmonious meeting, the sympathy, coöperation, and support of these representative bodies were most heartily assured. A report of progress was given by Dr. Atwater, and plans for the future were discussed. The most ample accommodations, in the Hall of Natural Sciences, which contains Laboratories, Storerooms, and all needful apparatus and appliances, large and well arranged cabinets of natural history, etc., etc., have been placed at the disposal of the Station, by the Trustees of the University. The use of lands belonging to the College, and to other parties at and near Middletown, are also tendered freely. With all these facilities, the small State appropriation, ($2,800 a year), and the additional contribution by the Proprietors of the *American Agriculturist*, will make it possible to employ at least three workers besides the Director, (whose salary is paid by the University). At the above meeting, Dr. Atwater exhibited statistics from the 19 Experiment Stations in Europe, showing that scarcely a dozen of them are more fully equipped.

An undertaking of this kind, however, if it will begin well, must begin slowly. Accuracy and thoroughness are indispensable to the greatest future success and usefulness. The work completed, and in form for publication, is, of course, not yet large, nor can it be very great immediately. Still a large number of fertilizers have been brought or sent in by farmers, and several have been already carefully examined. Some have proved good, others poor, and one, for example, though sold with strong recommendations, shows in every ton nearly 1,300 lbs. of sand, gravel, fragments of coal, and other equally worthless material....At the above meeting the introduction of a thorough "fertilizer control system" in the State was discussed, and it will be aimed at. It was agreed that analyses, *of public interest*, should be made for farmers and others without charge; and those of private interest mainly, at moderate prices. We have not space here to describe the collection of grasses, etc., cut at different periods of growth, the past summer, for investigation of their relative value, etc., nor of other work and plans in progress. These engaged at the Station have opportunity for work of great practical value, not only to Connecticut farmers, but to the whole country, and they will doubtless be stimulated to the highest activity and carefulness. We shall keep them and their doings, and the results obtained, before the people.

A Brick House Costing $4,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan was designed for the residence of Dr. Samuel McClure, of Olney, Ill. The style and general characteristics are significant of elegance and comfort, and suggest its adaptation to suburban, rather than the more rural situations....**Elevation,** (fig. 1.)—There is a peculiar compactness in the outlines of the principal building, while the piazza and tower contribute largely to the symmetry and gracefulness of the entire structure. The general details of the exterior are quite simple in themselves, and are so proportioned and arranged, as to adapt them to each other with artistic effect, and to produce marked features of unity and completeness....**First Story,** (fig. 3.)—Hight of ceiling 11 feet. The general divisions and arrangements are simple and practical. The Principal Entrance from the piazza is through outside and vestibule doors. The outside doors are made in pairs, with solid panels heavily molded on the face. The vestibule doors are of similar construction, except that their upper panels are of glass. There is a seeming extravagance in such "vestibules," or duplication of doors at the entrance of any dwelling, and they may be regarded as a luxury, rather than a necessity—and would be superfluous and inappropriate in the ordinary cottage, or farm-house; but in residences of this character, where there is abundant space, such vestibules are manifestly proper, adding a feature of elaborateness, and providing for many contingencies of times and seasons. The outside or storm-doors afford protection against extreme cold, and severe storms, and furnish additional security. The vestibule or "glass" doors admit an abundance of cheerful light to the hall. The main hall is roomy, and contains the principal stairs, which are of platform construction, are wide, and have hardwood rail, ballusters, and newel. The Parlor and Dining-room adjoin the hall through large double doors. The parlor and bed-room are separated by sliding doors. The bed-room has doors leading to the principal hall, and to the bath-room, which has a wash-basin and water-closet. The kitchen is supplied with a range, with elevated oven and a water-back; a 30-gallon copper boiler, a sink with closet underneath, a pump, and stationary wash-tubs in three divisions, and it connects through doors with the dining-room, rear lobby, cellar stairway, a large pantry, and a dish-closet. The rear lobby is arranged to connect with the rear entrance, kitchen, bath-room, and principal hall. The bath-room contains a tank, with a capacity for four hogsheads of water, (placed near the ceiling), bath-tub, wash-stand, and seat-closet. Lead-pipes necessary for the supply and distribution of cold and hot-water are provided in the kitchen and bath-room. Marble mantels are provided for the three principal rooms of this story, at an average cost of $25 each. Double architraves are intended for the trimming of the windows and doors in the principal apartments, and neat chair backs are provided for the dining-room and kitchen ....**Second Story,** (fig. 4.)—By the peculiar method of constructing the roof and framework, it will be found that the inside walls of this story are vertical or plumb, instead of angling as in the usual mansard roofs. The ceiling is nine feet high. This story has a hall, four large and one small, rooms, five closets, and a stairway to the tower. Each of the four large chambers has marble shelves resting on plaster trusses, as described in the July *American Agriculturist.* Single architraves are intended for the trimming of this story....**Construction** of the Walls and Roof.—The excavations are made 1½ foot deep, and the earth thrown out is used in grading around the house at completion, raising the surrounding surface one foot. The foundation and cross-walls (fig. 2) are 6½ feet high. The principal walls resting on the foundation, are 14 ft. 3 in. high, and the walls of the tower extend 11 ft. 6 in. above the principal walls. The walls inclosing the wing in the rear are 10 ft. high—all of hard burned brick and good mortar. The exterior walls of the foundation are 12 inches thick, and all other walls are 8 inches thick, and have heading courses every 2 ft. The bottom courses of the exterior foundation to the hight of 2½ feet, are laid in mortar composed of hydraulic cement and sharp sand, to prevent the absorption of dampness from the earth; all other mortar is composed of lime and sand. All exterior surfaces of brick work that are exposed to view must have "flush joints," and if intended for painting, should be rubbed smooth. All windows for the cellar and first story have sills of dressed stone, and have heads neatly arched of brick work. The window caps for the first story windows, are laid of brick, as shown in sketch, (fig. 5). These caps are easily executed while constructing the walls, and are quite ornamental; the figures on the sketch denote the distances or projections of the several parts beyond the face of the wall....Plates of 3 x 8 timber are laid flatwise on top of the brick walls, and the upper or roof framework is added as shown in section, (fig. 6): *A*, foundation, 12 inches thick; *B*, principal wall, 8 inches thick; *C*, *C*, tower walls; *D*, *D*, tower posts, 4 x 6 inches, adjoining the upper portion of tower walls, and forming a part of the tower; *E*, *E*, principal plates, 3 x 8 laid on brick work; *F*, tie, 3 x 8, resting on 2 x 4 studding, placed inside the wall, and nailed to the principal plates; *G*, *G*, rafter sawed to pattern, the lower end projects one inch beyond the face of the wall. *H*, ceiling timbers resting on the ties. The remaining framework will be readily understood. The roofs are inclosed with rough hemlock boards of even thickness, and thoroughly nailed to the rafters—and lastly covered with I. C. charcoal tin. The method of laying the tin on the upright or mansard part of the roof, is known in the trade as the "raised groove" plan, in which all the vertical joints of the tin are raised and folded, leaving an elevated seam or ridge, which stiffens the general surface, and adds to the picturesqueness of this form of roof, without increasing its cost. The balance of the tinning is laid with the ordinary lock-joint and soldered. *Gas pipes* are inserted in the framework so as to be concealed, except where they appear for attachments for 4 ceiling lights, and 4 side lights in the first story; for 8 side lights in the second story; for 1 ceiling light in the tower, and for 1 side light in the cellar. Ample opportunities for a thorough *Ventilation* are provided for

Fig. 1.—ELEVATION OF HOUSE.

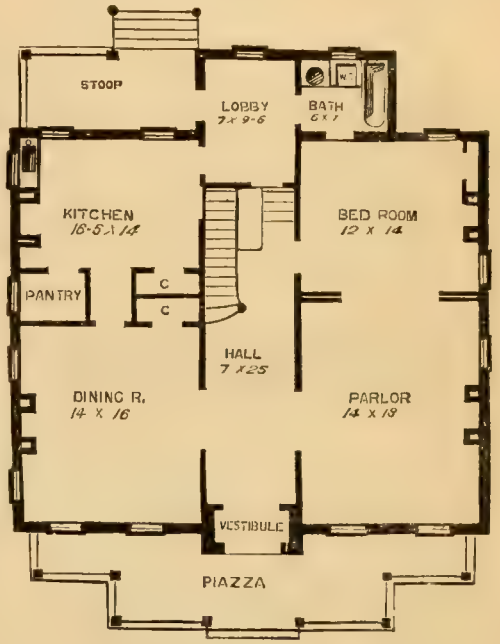


Fig. 3.—PLAN OF FIRST FLOOR.

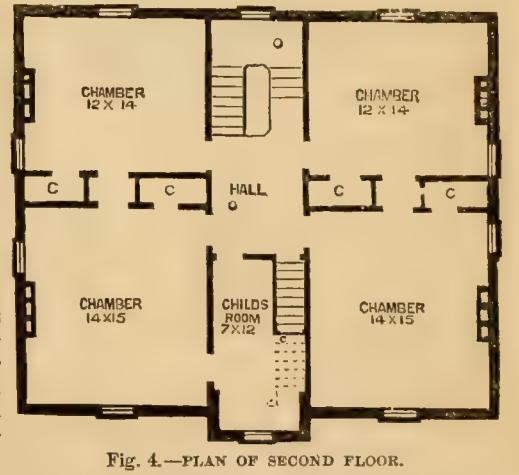


Fig. 4.—PLAN OF SECOND FLOOR.

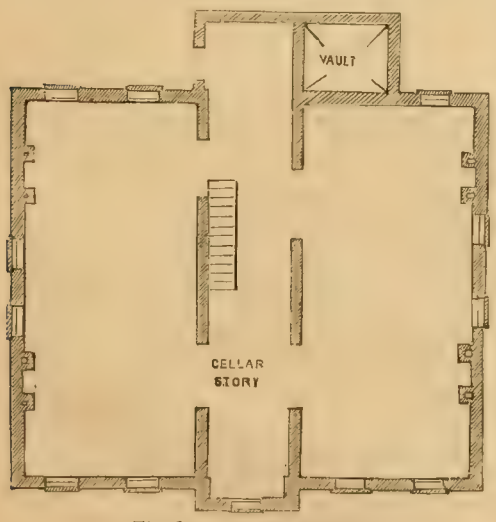


Fig. 2.—PLAN OF CELLAR.

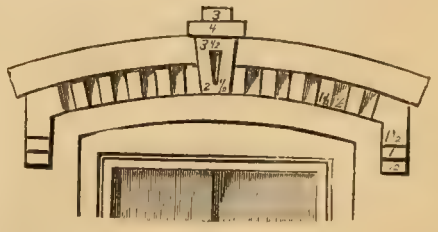


Fig. 5.—WINDOW CAPS.

in this plan. It will be seen that the four large rooms have windows in two of their sides, affording the most certain and satisfactory means of ventilation known.—Flues are also provided adjoining each room in which registers are put, for use in the more severe weather. Provision is made for the escape of the air from between the ceiling of the second story and the roof.—Five strong tin 4-inch tubes, with funnel covers, are inserted in the deck of the principal roof; four of them are placed 3 feet behind the chimneys, and one near the rear, connecting with a flattened tube leading directly from the bath room....The following **Estimate** of the quantities of materials and labor, of their several kinds, and their cost, embraces everything necessary to the completion of the house, excepting the appliances for heating, which may consist of a furnace, fire-place heaters, or open grates, as shall be best adapted to the location. In this vicinity, where hard coal is the chief fuel, we would suggest a furnace, placed in the cellar, with large pipes arranged to convey warm air to the different parts of the house. In localities where bituminous coal is used, the open grate gives good results, and is exceedingly cheerful in appearance. There are ranges and parlor stoves constructed to burn soft coal successfully, and it is undoubtedly possible that heating furnaces may be adapted to the use of the same fuel.

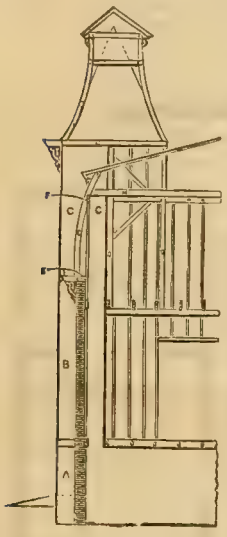


Fig. 6.—SECTION OF FRAME.

Estimate of cost:

80 yards Excavation, @ 25c. per yard	$20.00
60,000 brick (complete), @ $10 ⅌ 1000	600.00
120 feet Stone Sills and Coping, @ 30 c. per foot	36.00
1,000 yards Plastering principal, com'e. @ 30c. per yard	300.00
120 yards Plastering ceiling of cellar, (com'e), @15 c.	18.00
4763 feet Timber, @ 2c. per foot	95.26
viz. 2 Sills, 4x8 in. x 38 ft. long.	4 Hips, 3x6 in. x 14 ft. long.
68 Beams, 3x8 in. x 15 ft. l'g.	1 Deck Tie, 3x8 in. x 138 l'g.
34 Beams, 3x8 in. x 8 ft. l'g.	1 Deck Plate, 3x6 in., 188 lg
4 Beams, 3x7 in. x 16 ft. long.	1 Main Plate, 3x8 in. x 139.
9 Beams, 3x7 in. x 19 ft. l'g.	1 Tower Plate, 3x8 in. x 34.
4 Girts, 4x6 in. x 28 ft. long.	4 Tower Posts, 4x6 in. x 14.
1 Brace, 3x5 in. x 30 ft. long.	1 Piazza, 3x7in. x 220 ft. l'g.
100 rough plank Rafters, @ 25c. each	25.00
360 Wall Strips, 2x4x12, @ 12c. each	43.20
308 Hemlock Boards, 10x13, @ 18c. each	55.44
250 Mill-worked Flooring Boards, 9-in. @ 30c. each	75.00
130 Furring Strips, 1x2x13, @ 5c. each	6.50
31 squares of Tin, @ $8.50 per square	263.50
16 Windows, 1st story and tower, (complete) @ $16 each	256.00
12 Cellar Windows, (complete), @ $8 each	96.00
13 Dormer Windows, (complete), @ $20 each	260.00
Cornices, principal and deck	130.00
Piazza Stoop and Wing finish (except tin) (complete)	300.00
Finial on Tower	8.00
Stairs, (complete) $100.00; 38 Doors, @ $10 each (co'e)	480.00
Finish in Closets	25.00
Mantels and Shelves, (of marble)	100.00
Range, (with elevated oven and water back)	80.00
Plumbing and Gas-pipes	220.00
Nails and Anchors	27.10
Painting, $200; Carriage, $30	230.00
Carpenter's Labor, not included in the completed w'ks	250.00
Total cost, complete	$4,000.00

Science Applied to Farming.—XII.

BY PROF. W. O. ATWATER, WESLEYAN UNIVERSITY, *Middletown, Conn.*

Value of Salt-Marsh and Bog Hays.—How to use them economically.—Inquiries Answered.

Along our sea-board are many thousands of acres of so-called salt-marshes, and in the interior are still larger areas of low, wet lands, on which very large quantities of hay of an inferior quality is annually gathered. The opinions of farmers as to the value of such forage, are widely different. Perhaps I shall best answer a number of inquiries as to the composition and feeding value of these hays, by comparing some of the most important ones with various qualities of upland hay and straw. This has been made possible by some late investigations of Prof. Storer, of the Bussey Institution, the agricultural department of Harvard University, the thoroughness and usefulness of whose researches can hardly be over-estimated. The table below gives the average results of a number of Prof. Storer's analyses of marsh hays, and with them, for the sake of comparison, the composition of several sorts of hay and straw, which, in lack of analyses made in this country, are taken from European sources.

Table 19. KINDS OF HAY. 100 POUNDS CONTAIN	Water.	Ash.	Organic Substance.	Organic Substance consists of: Albuminoids.	Crude Fiber.	Other Carbo-hydrates.	Fats.
a. Salt Hays.							
Better quality mixed (1)	8.2	7.1	84.7	7.5	32.7	41.6	2.9
Black Grass (2)	8.7	5.2	86.1	6.8	33.2	43.8	2.3
Rush Salt Grass (3)	8.6	6.7	84.6	4.6	33.3	44.9	1.8
Coarse Salt Marsh Grass (4	15.9	10.4	73.7	5.1	29.4	36.7	2.5
b. Fresh Marsh Hays.							
Bog Hay (5) cut in June	7.4	6.3	86.3	9.9	33.8	40.4	2.2
Bog Hay, cut in August	8.2	5.5	86.3	6.9	33.4	43.5	2.5
c. Various Hays & Straws. (6)							
Best Upland Hay	16.0	7.7	76.3	13.5	19.3	40.8	2.6
Medium quality Hay	14.3	6.2	79.5	9.7	26.3	41.6	2.3
Poor quality Hay	14.3	5.0	80.7	7.5	33.5	38.2	1.5
Oat Straw	14.3	4.0	81.7	3.5	42.0	34.2	2.0
Winter Wheat Straw	14.3	4.6	81.1	3.0	44.0	32.6	1.5

(1) Mixture of Spike Grass, *Brizopyrum spicatum*, and Sea Spear Grass, *Glyceria maritima*, growing on brackish marshes.—(2) *Juncus Bulbosus*.—(3) Called also Red Salt Grass, *Spartina Juncea*.—(4) Called also "Sedge," *Spartina stricta*.—(5) *Carex stricta*.—(6) From European anylyses.

A comparison of these figures will recall the familiar fact, that all these kinds of hay and straw contain the same kind of ingredients, but in different proportions. They all consist of water, mineral matter, or ash, and organic substance. The organic substances consist of albuminoids, which contain nitrogen, and crude fiber (woody-fiber, cellulose), other carbo-hydrates (sugar, starch, gum, etc.), and fatty matters, which contain no nitrogen. As we go down from the best qualities of hay, to the poorer qualities of hay and straw (in *c*), the proportion of albuminoids and fats decreases, while the crude fiber increases. The better qualities of salt hay, (*a*), correspond very closely with the poor quality hay. The fresh bog-hay is somewhat better than the European "poor hay," while the inferior salt hays stand between this and straw.

The Actual Feeding value of these Hays

depends not merely upon their percentage of albuminoids, carbo-hydrates, etc., but on the amounts of each of these ingredients which are actually digestible and nutritious. The digestibility can be learned only by feeding trials with oxen, cows, sheep, etc., such as have been described in former articles, (see April number). No such trials have ever been carefully made in this country, and we are left to hope for the time when Experiment Stations will be established here for the study of such questions. Very fortunately for our purpose, however, many hundreds of feeding trials have been made in the European Stations, in which the digestibility of various foods, by different domestic animals, has been tested. It is found, for instance, that if such hay as that designated as "poor quality hay" in the table, about 45 per cent of the albuminoids, and ½ of the fats, as an average, will be digestible, while the amount of digestible carbonydrates will not vary far from the figures for "other carbo-hydrates" in the table. If we assume then, that as large a part of each pound of albuminoids, fats, etc, would be digestible in the marsh hays, as in the European "poor quality hay," the amounts of digestible material in the various hays would be as below.

Table 20. KINDS OF HAY (AND STRAW). 100 POUNDS CONTAIN	Organic substance. Total.	Digestible.	The digestible organic substance consists of: Albuminoids.	Carbo-hydrates.	Fats.	Ratio of digestible Albuminoids to Carbo-hydrates.	Calculated money value, over the hay being worth $ for same weight.
a. Salt Hay.	lbs.	lbs.	lbs.	lbs.	lbs.		
Better quality mixed	84.7	45.9	3.4	41.6	0.9	1:12.9	$ .82
Black Grass	86.1	47.6	3.9	43.8	0.8	1:15.3	.84
Rush Salt Grass	81.6	47.6	2.1	45.0	0.6	1:22.1	.78
Coarse Salt Marsh grass	73.7	39.7	2.2	36.7	0.8	1:17.6	.68
b. Fresh "meadow" hay							
Bog Hay, cut in June	86.3	45.6	4.4	40.5	0.7	1: 9.6	.90
Bog Hay, cut in August	86.3	47.4	3.1	43.5	0.8	1:14.7	.84
c. Hay & straw, Europ'n							
Best Upland Hay	76.3	54.5	9.2	43.1	1.2	1: 5.0	1.34
Medium quality Hay	79.5	47.4	5.4	41.1	0.9	1: 7.9	1.00
Poor quality Hay	80.7	38.8	3.1	34.9	0.5	1:10.6	.75
Oat Straw	81.7	39.9	1.3	37.4	0.6	1:29.9	.62
Winter Wheat Straw	81.1	33.1	0.8	31.9	0.4	1:41.1	.50

Let us bear in mind, that while the figures for the European products are based on direct experiment, those for the American ones are not. Still the latter are probably not far out of the way. Notice how in *c* the digestible albuminoids fall from 9.2 lbs. in 100 pounds of best upland hay, to 3.4 lbs. in "poor quality" hay, and to only 0.8 in wheat straw. There is likewise a decrease in the other digestible ingredients.

Marsh Hays compared with Upland Hays and Straw.

Taking digestible substance, as a whole, the marsh hays generally stand between the "medium" and "poor" quality hay, in the table above. It should be noted, however, that in Table 19, the European products are given with more water than ours; with the same proportions of water the marsh hays would stand lower in comparison. As regards the proportion of digestible albuminoids, the most valuable part of the food, the early cut bog-hay stands higher, and the better quality salt hay about on a par with "poor quality" European hay. The late cut bog-hay and the black grass, are somewhat, and the coarse salt grasses considerably inferior to the "poor quality" hay, the salt grasses being little better than straw.

Money Value of Marsh Hays.

The work of the Farmers' Experiment Stations in Europe, has shown that a pound of digestible albuminoids, or of starch, or sugar, or fat, is worth about as much in one kind of ordinary fodder as in another; and so, assuming the value of a pound of one of these in one food, we can calculate its value in other foods. This mode of reckoning is now very common in Germany. Thus in table 20, (taken from a standard German work), a given quantity of "medium quality" hay, say 100 lbs., being worth $1, then 100 lbs. of best upland hay is worth $1.34, and 100 lbs. of wheat or rye straw are worth 50 cents. Thus computed, the values of the salt hays range from 68 to 84 cents, (table 20). Those who question the high value assigned to these marsh hays, and to oat or wheat straw, must bear in mind that they have these values only *when rightly used*. The marsh hays, like the straws, lack (albuminoids) nitrogen. To get their full value we must feed with them such nitrogenous foods as oil-cake, bran, malt-sprouts, etc.

How these conclusions are supported by both the most advanced science and the most successful practice, and how the materials may be profitably mixed and fed, I have not space to show further here, but will do so soon.

Ogden Farm Papers.—No. 70.

BY GEORGE E. WARING, JR.,

One can hardly be surprised at the wide-spread interest that seems to have been awakened by the reference made in these papers to the question of irrigation. Among many encouraging letters received from different parts of the country, several give important testimony as to the use, and value of the systems as practiced here.

A correspondent in Fort Wayne, Indiana, spent last spring in Southern California, where the average rainfall is less than one-third of what it is here, and where it seldom rains at all from the first of March to the first of December. "They rely upon irrigation exclusively, and have yet in use the very primitive system introduced by the Spanish missionaries. Yet with this they are able to cut eight crops of alfalfa every year, and they cut each time from a ton to a ton and a half per acre. I was shown a field that had produced such crops for twelve years, and the alfalfa was as luxuriant then as when they commenced. So too with forest trees, vines, and plants of every description, their growth and fruitfulness is something wonderful."—It is considered by these farmers, that much of the fertilizing effect of the irrigation is due to the high temperature of the water, and to the fertilizing material accumulated during the flow of the water from the rains over the surface before it reaches the streams. The natural fertility of the soil is said not to be great. Water from Artesian wells is far less valuable for

irrigation, being much colder, and holding less fertilizing matter in solution or suspension. Mr. J. W. Sanborn, of New Hampshire, says that his father's farm has been irrigated for twenty-five years, and that while the land is not rich, and the product, even with irrigation, not remarkable, they think highly of the practice, and find it quite profitable. No fertilizers of any kind have been used for thirty-five years, yet the productiveness of the land is maintained. The area irrigated is about one hundred acres, being all that lies below the level of the stream. The reservoir is a fifty-acre pond, artificially constructed for the purpose, and lying three-quarters of a mile away from the irrigated land. The water is conveyed in smooth channels cheaply made, mostly by the plow. The system is rather crude, and not carefully arranged in its details. The water is first discharged on the highest land, being let out from the main canals at intervals, as needed, flowing over the ground in thin sheets. Other canals run parallel to the main ones, catching its water and distributing it again. There is no irrigation in the autumn, and latterly the ponds and streams have been used during the winter for milling. The irrigation begins as early as convenient in the spring, and different parts of the land are irrigated and left dry alternately.

During my absence in Europe, the liquid manure works at Ogden Farm, described a few months ago, have been completed so far as the discharging gutters are concerned. We must wait for heavy rains for water enough to start the flow needed to indicate the level or course over the land at which these are to be made. It will probably be some months before the system is complete, as it is yet quite uncertain what amount of water we shall have at command.

A correspondent in Oswego County, New York, asks for advice as to the disposition of his liquid manure, and whether it would be safe to apply it directly to growing crops. There is no question that it would be perfectly safe to apply the concentrated liquid manure collected in his tank directly to the *soil* on which his crops grow, but it may well be too strong to be safely showered over the leaves, especially in dry weather. The best course would be to turn into the tank a sufficient amount of roof water, or of surface wash of the barnyard to dilute the contents. If some mechanical arrangement can be devised, (similar to my own), for handling the liquid by wind-mill and gravitation, then the dilution should be as great as possible, and its result, within reasonable limits, would doubtless be increased in almost exact proportion to the quantity of liquid used, no matter how large a proportion of water it may contain. In reply to this correspondent's question about apparatus for cooking feed, I would say that I know of no improvement on the systems already described.

From a mass of letters describing the performances of pure Jerseys, and of grade Jerseys, I select one concerning a half-breed, whose sire was a Jersey bull, and whose dam a native cow. She was five years old when she calved, April 5, 1875. During one week, one month after calving, she gave 99¼ quarts of milk, from which there was made 13 lbs. 15¾ ozs. of butter, being 1 lb. of butter to 7 1/10 quarts of milk. Her second trial was for one week four months after calving. She then gave 86½ quarts of milk from which there was made 12 lbs. 3¼ ozs. of butter, being 1 lb. of butter to 7.07 quarts of milk. During the first trial she had two quarts of buckwheat middlings and four quarts of wheat shorts with cut hay. She went to pasture May 31, and had no grain up to the time of the second trial, but during that week she had a "little grain in mashes and slop." The cow weighs 1,120 lbs. Her owner is confident that her success is due to her Jersey blood.

The following enquiries come from a farmer in Northern Ohio, and as similar questions are often asked, I judge that the subject will have general interest. The writer has lately bought a dairy farm of 150 acres, old, neglected, and run down, with the buildings and fences out of repair. He wishes to bring it to a high state of cultivation with as little delay as possible, and to keep a dairy of choice milkers, and raise grade swine. He has a thoroughbred short-horn bull, from good milking family, and thinks of buying a Berkshire or Essex boar to cross with Chester White or native sows. Will sell milk to a factory in summer, and send it to Cleveland in winter. He suggests soiling for the sake of the manure, giving in addition to the green forage, some form of grain food. He contemplated building a large basement barn, but concluded to patch up the old buildings and make them answer as long as possible. His soil is a heavy yellow clay; land in the vicinity is worth $50 to $100 per acre, according to improvements; butter averages 30 cents per pound; milk, 2 cents per quart in summer, and 4 cents in winter; beef 4 to 5 cents, (gross); hay, $12 per ton; oats, 40 cents per bushel, and other grains in proportion. Underdraining costs about $35 per acre; horse manure, $1 per wagon load; muck, 25 cents, to be drawn four miles. He has understood that rye as a green soiling crop checks the flow of milk, although cows are fond of it. Wishing to know what course to follow to get the best return from a dairy, while constantly improving the productiveness of the farm, he asks specifically the following questions: 1. Will it pay me to underdrain my farm, taking into consideration the value of land, markets, etc. 2. For quantity of milk, and beef after a few years service as milkers, had I better purchase native cows or thorough-breds to cross with my short-horn bull, and what breed, or am I right in having a short-horn bull? 3. What rotation shall I practice in crops, and what crops shall I grow for soiling? 4. How can I bring up the productive capacity of worn-out fields the quickest?

I can only answer these questions very briefly. (1.) In all probability it will, but try 10 acres and see for yourself. (2.) You will do much better with a Dutch bull, (what some fanciers call "Holstein"). The largest milkers among native cows that you can find, will be the most profitable foundation for your stock, but it will help very much to buy one or two Dutch cows, and so hasten the infusion of Dutch blood, which, if well selected, will secure the largest quantity of milk. (3.) Oats, clover, and green corn—depend on the latter from mid-summer until frost. Any good farmer in your neighborhood can give you better advice than I can as to your rotation. (4.) By top-dressing.

Curiosities of Rifle Shooting.

We make no pretentions to skill in the use of a gun. In early life, in a western wilderness, some practice with the old "flint-lock" was essential, to protect the farm stock from wild animals, but our life has been too busy to allow much time to shooting for sport; nor, except being present at the opening day of "Creedmoor," have we participated in, or witnessed any of the recent rifle practice, save that of a small rifle association near our country residence. So we write not professionally, but as an "amateur" in the fullest sense....Two months ago, when needing some physical exercise, combined with recreation, we purchased a "Remington rifle," (which, by the way, has proved itself an almost perfect fire-arm), and after working at the writing desk until 3 or 4 P. M., we have, now and then, gone out with a few literary, professional, and business friends, to try our hands at the target, shooting 200 yards on Saturday afternoons, and 1,000 yards when out on any other days. This has lead to brushing up the principles of "gunnery," which were included in our regular course of mathematical studies, thirty odd years since, and to examining some of the modern improvements, a few of which are noticed below.—Those wishing full details in the art, and science, of rifle-shooting, are referred to Col. Wingate's Manual, noticed last month, (a very good book, by the way, supplied at $1.50 post-paid). We will give here only a few items, of general interest to all, and useful to those handling a gun.

Modern fire-arms are now generally loaded at the breech, by inserting there a cartridge, or metallic shell, containing powder, bullet, or shot, with percussion powder in the rim, (fig. 1), to be struck with the lock hammer; or with a percussion cap in the center of the rim, (fig. 2), which is struck by a pin driven in by the hammer—hence called "central fire." This charging is done so rapidly, that a gun may be loaded and fired from fifteen to thirty times a minute, not allowing for the time used in sighting. The breech-loaders shoot quite as accurately as the slow muzzle-loaders, when new, and more so after much use, as the latter become more or less worn by the ramrod, etc., right at the muzzle, the part that gives the last direction to the ball or charge of shot....The percussion powder drives the fire all through the charge instantly, so that the aim is not lost while waiting for the powder to ignite through from the pan of the flint-lock....Coarse-grained powder is now preferred, even for small arms, while for heavy ordnance, cannon-powder as coarse-grained as chestnuts, and even walnuts, is used. The kernels burn inward, and increase the force as the charge moves through the barrel....Instead of the old round balls, elongated conical bullets (fig. 3) are now generally adopted. These meet much less resistance from the air, in proportion to their weight and momentum. For example, the Creedmoor bullet, (fig. 3), weighing 550 grains, (1¼ ounces), may be considered as a rod, 44/100ths of an inch in diameter, and 1¼ inches long, with ¼ inch more in a cone, or rounded head. The same amount of lead in a round ball would be nearly ¾ inch (.73) in diameter. A section through the long bullet contains only about one-seventh of a square inch (.152); while a section through the round ball measures nearly ½ of a square inch (42/100ths), or nearly 2¾ times as much. So, the round ball, *of the same weight*, would meet 2¾ times as much resistance from the air; therefore, with the same powder as for the round, the long bullet would fly nearly *three times as far*, while the conical or pointed end, and other reasons connected with the displacement of the air in larger quantity, adds much more to the effectiveness of the long bullet. *Shooting is now done at half a mile with as much power and accuracy, as it could formerly be done at* 30 *or* 40 *rods*....The best rifle bullets are "swaged," that is, pressed in a steel-mold, which gives them uniform shape and density, not attainable in casting melted lead in molds, and are carefully "patched," or wrapped with paper. They now have 1 ounce of tin to 15 ounces of lead, which makes them harder; they thus retain their perfect shape better, lead the barrel less, and are not so likely to lose their form in the air.....Another great improvement is in "rifling" guns of all sizes, even the heaviest cannon. Spiral grooves, like long screw-threads, are cut on the inside of the barrel. These spin the bullet on its longer axis, like a top. Any imperfections of form, or difference in density on any part of it, which would send it out of a direct line, are rapidly turned in every direction, as it moves onward, and it thus keeps a true line. But for this motion, it would turn around, and move "butt-end foremost." The Indian long ago kept his arrow point forward, and in accurate flight, by binding

Fig. 1.—RIM-FIRE CARTRIDGE.

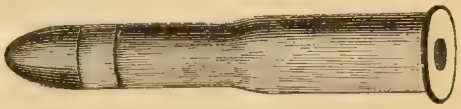


Fig. 2.—CENTER-FIRE CARTRIDGE.

Fig. 3.—550 GRAIN BULLET—FULL SIZE.

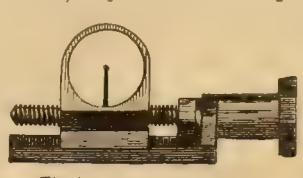


Fig. 4.—WIND-GAUGE SIGHT.

feathers spirally upon the rear end, which, by the action of the air, kept the arrow whirling on its

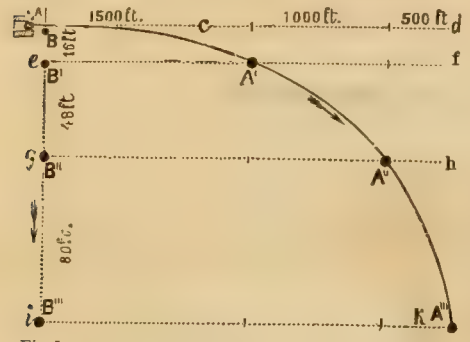


Fig. 5.—MOTION OF A FALLING AND A MOVING BULLET.

long axis....(For other items about guns, projectiles, powder, etc., see Wingate's book; also the pamphlets furnished free by E. Remington & Sons.)

When a bullet leaves the gun, it is affected by *five* distinct forces, *each of them acting entirely independent of the others*: 1st. The *spiral* or *screw motion* turning it on its own axis, *over* from the left, given by the rifling of the barrel.—2nd. The *forward motion* depending upon the amount and quality of the powder, kind of gun, etc.—3rd. The *resistance of the air*, which constantly decreases its velocity. The greater the velocity, the greater the resistance of the air. A fan may be moved slowly through the air without its opposing force being felt, but if moved very rapidly, this may break it from the handle, just as a gale of wind will

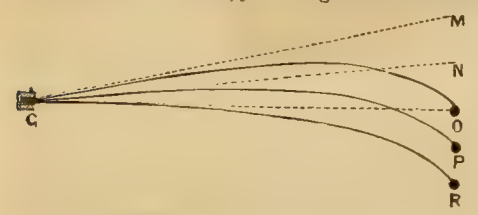


Fig. 6.—SHOOTING AT DIFFERENT ELEVATIONS.

break down a strong tree, or force down a building. We have no accurate figures, but we may suppose a bullet sent with such a velocity as to go 1,500 feet the first second, will be so opposed by the air, that in the next second it will go but 1,000 feet, and in the third second only 500 feet. If the wind blows from the rear it will help the velocity, and if from the front, it will retard it, both influences to be taken into account, in accurate shooting at long range, and especially with military or other guns carrying large bullets with moderate velocity.—4th. The *side motion* given by cross or diagonal winds. This is an important element, because variable, and observing and providing for this, constitute nine-tenths of the success of rifle-shooting. If we hang a long bullet, like fig. 3, upon a very long thread so that it will swing nearly horizontally, a gentle wind of 4 miles an hour will in one second swing the bullet nearly one foot, and in three seconds, about 3½ feet. A strong wind of 35 miles an hour will move it about 3½ feet in a second, and 15 or 16 feet in three seconds, while a gale, 80 miles an hour, will move the bullet about 7½ feet

Fig. 7.—REAR SIGHT.

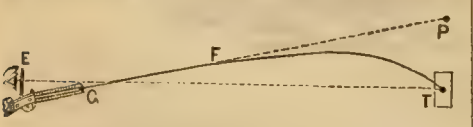


Fig. 8.—MODE OF SIGHTING AT LONG RANGE.

in one second, and 30 feet in three seconds. The following table, not designed to be strictly accurate, will give some idea of the relative force of the wind upon a bullet suspended as above:

Velocity of wind per hr.	*4 miles*	*10 m.*	*20 m.*	*50 m.*	*80 m.*
Moves a bullet in 1 second	10 in.	18 in.	2½ ft.	5 ft.	7½ ft.
Moves a bullet in 2 sec'nds	1½ ft.	3 ft.	3¾ ft.	9 ft.	13 ft.
Moves a bullet in 3 sec'nds	3½ ft.	7 ft.	11 ft.	21 ft.	30 ft.

This side wind force acts upon a bullet moving forward freely through the air, just the same as if it were hanging upon a long thread, and it has to be provided for in shooting. It is done either by aiming to the windward side of the target, or by shifting the sight. The better class of rifles have the *front* sight set upon a graduated slide provided with a screw, (fig. 4), called a "wind-gauge," to throw the muzzle to either side of the sight. Each mark on the wind-gauge corresponds to one inch for each 150 feet of distance, or 20 inches for 3,000 feet, (1,000 yards). At this distance one would have to move the first sight 18 points in a gale of wind.—5th. *The force of gravity or weight*, which carries the ball downward. Omitting the resistance of the air, we may say that a heavy body dropped from an elevation falls 16 feet the first second, 48 feet the second second, 80 feet the third second, or a total of 144

CREEDMOOR TARGET for 700 to 1,100 Yards—Scale **1:35**—*Bulls-eye* 36 inches; *Center* 54 in. diam.; *Inner*, square, 6 ft.; *Outers* (2 wings) 3x6 ft.—Counting: Bulls-eye, **5**, Center, **4**; Inner, **3**; Outers, **2**; Shots Missing the Target count **0**.

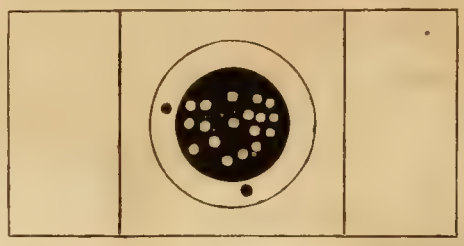


Fig. 9.

SCORE of **20** consecutive shots, Nov. 1, 1875, at **1,000 yards** (360 feet over half a mile!) No sighting shots taken. Day cool and cloudy. Time 3.45 to 5 o'clock P. M. Wind very steady from the left. Wind-gauge 4½ points to right. Elevation 2°38'. Weight of powder 90 grains. Hazard's *F. G.* Weight of bullet 550 grains; elongated conical (fig. 3). Rifle, Remington's Creedmoor. No wind guides, except a small flag at firing station and at target, and smoke from neighboring chimneys. Count: 5, 4, 5, 4, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5,—or **98** points in a possible **100**. The shooting was stopped by darkness coming on.—O. J.

feet in three seconds, and so on. But a bullet moving forward by the powder force, *falls* just the same as if it was not going forward, the two forces are independent of each other. Thus in fig. 5, suspend the ball *B* so that the ball *A* will loosen it at the instant of starting towards *d*. In one second *B* will fall 16 feet to B^1 in the line *e....f*, and *A* will fall to A^1 in the same line, though carried forward 1,500 feet. At the end of two seconds B^1 will have fallen

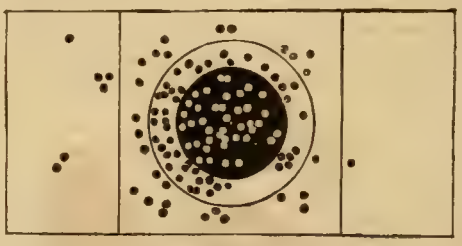


Fig. 10.

SCORE of **120** consecutive shots (15 per day), except one or two "sighting shots" on some days: Oct. 5th, 7th, 8th, 14th, 19th, 20th, 21st and 22d. **1,000 Yards.** Rifle, powder, bullet, etc., same as in fig. 9. Wind and light variable on different days; wind-gauge ranging from 0 to 9½ points, and elevation from 2°33' to 2°.9' for front and rear winds. General daily score 61 to 65, except on Oct. 14th, when the wind was very "gusty," reducing the score that day to 46–75. O. J.

48 feet more to B^{11} in the line *g....h*, and *A* will fall to A^{11}, having moved forward 1,000 ft. In the third second *A* falls 80 feet more to B^{111} in the line *i....k*, and *A* falls to A^{111} in the same line, having moved forward 500 feet, unless a rear wind carries it further, or a front wind retards it, making it fall short of A^{111}. Fig. 6 illustrates the track of the ball if the gun be fired at different elevations, as at *o*, *n*, or *m*. To meet this difficulty, the gunner calculates as nearly as he can, the distance of the object aimed at, and aim above it. If shooting a 550 grain conical bullet, with 90 grains of powder, he aims 6 to 7 feet *above* an object 40 rods away; but above it 30 feet if 80 rods away; and 130 to 140 feet above it, if 1,000 yards off—more in each case if using a thicker ball or less powder, etc. (In making the score shown in fig. 9, the bore of the rifle was aimed at a point 138 *feet above the bull's eye*, and 7½ *feet to the left of it*, on account of a full moderate wind (12 miles an hour) blowing from that direction! Most rifles now have a rear sight to raise and fall, so that, with the wind-gauge, one can so adjust the two as to always aim the sights directly at the mark, though the barrel is aimed and the bullet *starts* quite wide of the mark;

Fig. 11.—MAJ. HENRY FULTON'S POSITION.

gravity and the wind bring it to the desired point. The best rifles have a rear-sight and vernier, fig. 7, upon the breech close to the eye, and raise or fall the sighting disk with a screw. Fig. 8 shows this: the sighting is from *E* to *T*; the gun-barrel is pointed at *P*, and the bullet follows the black line. It is important to note that when the rear-sight is elevated, it must be held *perpendicular*, the slightest turning to either side will throw the ball to that side. The best rifles now have a little spirit level just back of the front sight, so that the eye can observe a bubble of air when the gun is held *level*.... We can now understand what the careful gunner does on attempting to fire at a distant animal or target. First, he quickly estimates the distance, and knowing the power of his gun, powder, etc., and if need be, allowing for a strong front or rear wind, he quickly turns the screw on the rear sight up or down as needed. At the same time noting the wind force, from its effects upon trees, grass, and upon smoke if any be in sight, he gives one or

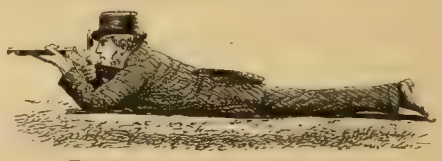


Fig. 12.—COL. JOHN BODINE'S POSITION.

more turns to the "wind-gauge" screw in front. ....The principles involved, apply to all kinds of shooting, with rifles, shot guns, and to the various kinds of ordnance. The study and the application of these principles to the actual test, constitute the chief attraction of rifle shooting for the writer.

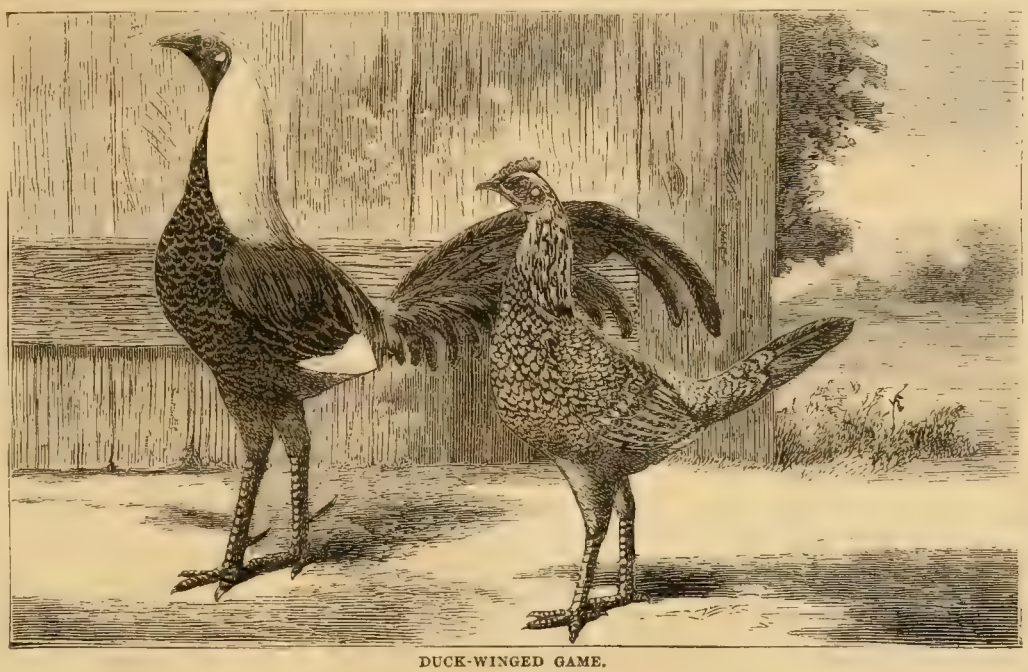
To show what even a little study and practice will do, we give in figs. 9 and 10 reduced exact copies of two targets made by the writer. Since fig. 9 was sent to the engraver, two other scores, nearly as good, have been made. Fig. 10 has all the shots made during October, excepting one or two preliminary "sighting shots" each day, to experiment upon the wind force at the time....The rules for shooting at rifle ranges require "standing," "off-hand" for 40 to 60 rods (300 yards) or less; while for all further distances "any position" is allowed which one can take without artificial rests, or any other aid than he can get from his own body, on level ground. The three illustrations (figs. 11, 12, 13) show some of these positions. Fig. 13—differing somewhat from that of Hepburn, Yale, etc.—is a position adopted by the writer and one or two gentlemen with him. It is very steady; the lower limbs crossing, the feet brace *firmly from each side*. The left hand resting upon the thighs, grasps the

Fig. 13.—OUR POSITION.

barrel firmly, holds it steady, and brings it back firmly against the shoulder, which saves one from the recoil or "kicking" of a heavy charge. This last item is important in all shooting. A gun, firmly against the shoulder, seldom "hurts"; give it even half an inch of motion in the air, or while pressing back the soft flesh of the arm, and it acquires a momentum like that of a *moving* stone,

The Duck-Winged Game

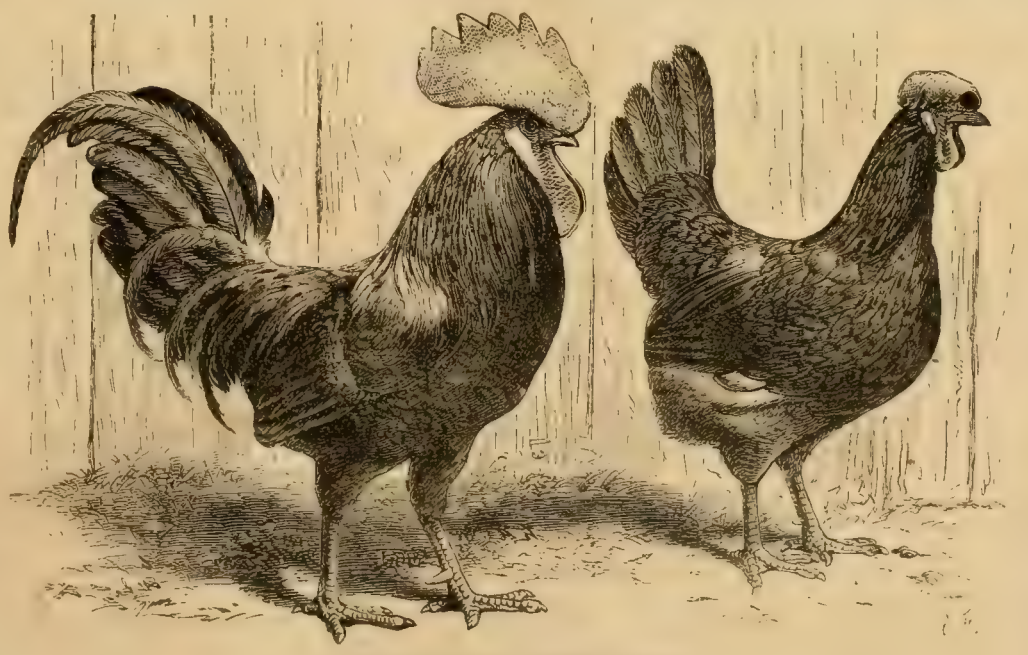
Of the Game varieties of fowls the Duck-Winged is one of the most beautiful. Although its graceful form and dignified carriage is well represented in our illustration, yet its brilliantly colored plumage can only be truly shown by the painter's art. Its bright and varied colors are so beautifully blended together that it excites the admiration of those even who take no delight in breeding poultry, while to the fancier it is one of the first favorites. The face of the Duck-Wing Game is a deep crimson; the head is covered with small silvery-white feathers; the hackle is white, slightly tinged with straw-yellow; the back is maroon, claret and straw-yellow; the sadddle is slightly darker than the hackle, with fine short feathers hiding the points of the wings; the shoulders are bright brass-yellow from the butts up to the clear steel bar, and no light streak is admissible in a well-bred bird; the shoulder butts are black; the breast and tail are black, with a shade of bronze upon the sickle feathers; the eyes are red, and the legs yellow. The weight is from five to six pounds. The hen, when pure bred, has the head gray; comb and face bright red; hackle silver-gray, with dark stripes; the breast is bright salmon-red; the back and shoulder coverts should be slaty-gray, free from pencilling; the tail is dark-gray, so dark as to be nearly black; the fluff inside is a steel-gray, and the legs yellow. In breeding Duck-Wings for color, much care and skill is necessary, but for the ordinary uses of poultry it is not necessary to do more than select the best birds, feed well, and keep them in the best and most vigorous health. Unfortunately for game poultry, their courage and endurance has been put to wrong uses, and through their enforced connection with the brutal and cruel sports of the cock-pit, they have in a measure come to be identified therewith, and are wrongly supposed to be good for nothing but fighting. On the contrary, the game fowl is one of the most, if not the most, beautiful of our fowls. It is the best table fowl, so far as regards quality and flavor of flesh. Its eggs are exceedingly rich, and much desired for pastry or cakes. The cock is courageous, and will not hesitate to attack a hawk, and will defeat the intruder in every attempt to ravage the poultry-yard. The hen is an excellent mother, and although somewhat nervous and excitable when brooding her chickens, yet with care and quiet gentle treatment she may be handled with ease. While brooding, she is as courageous as the cock, and will defend her chickens from a hawk, and generally with success. A farmer whose grain fields, and those of his neighbors, offer a too tempting foraging ground for these active fowls, would be wise to choose some of the heavier bodied breeds, but where no damage of this kind can occur, any of the varieties of game fowls might be chosen by those who fancy them, and wish for delicious eggs and flesh.



DUCK-WINGED GAME.

Brown Leghorn

The Leghorns have a high reputation as layers. Of these Italian fowls the brown variety has recently become very popular. It was introduced by Mr. F. J. Kinney, of Worcester, Mass., who bought the first trio that was imported, in 1853, from on board a ship in Boston harbor. Since then Mr. Kinney has made several importations from Leghorn, in Italy. The accompanying illustration is a portrait of a pair of birds bred and owned by him, and is copied from a photograph of the live birds. The character of these birds is of the very best. They are yellow skinned, and excellent table fowls, are extremely hardy, and enormous layers. Mr. Kinney reports that his hens lay on the average 240 eggs in the year. They are heavier birds than the White Leghorns, and are much hardier and precocious; pullets often begin to lay before they are five months old, and continue laying during the whole winter. They are gay plumaged birds, and have become very popular of late amongst fanciers, as they must also soon become amongst farmers, if they have not become so already. The Brown Leghorns are described as having the comb of the Black Spanish fowl, with its head and body, and the plumage or color of the Black-red Game. The Brown Leghorn cock is black-breasted, with hackles of orange-red, striped with black; the ear-lobes are white. The hen is salmon-color on the breast, with the rest of the plumage similar to that of the partridge, or brown, finely penciled with dark markings. They thrive in confinement well, and Mr. Kinney informs us that he has raised a thousand healthy birds in ten yards only. We are not informed as to the size of these yards, but if they are more than usually spacious, this fact is a proof of the hardiness of this breed. A prominent English poultry fancier is of the decided opinion that this breed is the best of all our American breeds, when size and product of eggs is taken into consideration. They are non-sitters, which is a great advantage, when eggs are the product mainly desired. The pair of fowls here represented, have descended from Mr. Kinney's Brown Prince, a noted premium bird, which is three years old, and weighs seven pounds, and from two hens which are of the Signora strain. The hen Signora is eight years old, and weighs six and a quarter pounds. She has laid in all 1,530 eggs, and is still laying as well as ever. This fact is remarkable, and shows the value of this breed, and especially of this strain, which has been carefully bred from the best selected stock, with a view to the production of flesh and eggs. There is scarcely any stock of the farm which is so poorly managed as the poultry; yet there is none that may be made more productive. A yield of two or three dozen eggs, and a brood of three or four chickens, is generally considered a fair seasons' production for a hen. This is the consequence of keeping poor stock, or neglecting that which is better, and capable of doing better with proper treatment. Poultry may be improved by careful breeding as well as a pig or a cow. An infusion of new blood should be procured every year or two, and a bird of undoubted excellence should be bought.



A PAIR OF BROWN LEGHORN FOWLS.

Walks and Talks on the Farm.—No. 144.

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The Deacon wants me to write a "piece" about the extravagance of farmers and of farmers' sons and daughters. He thinks the young people spend four times as much now as they did when he first started in life. He claims that this fact has been proved by actual figures. I do not dispute them. But there is nothing new in all this. I was told the same thing when I was a boy. And my father brought forth as strong facts to prove his assertion, as any that the Deacon adduces now. But what of it? Does the Deacon want us to go back to tallow candles and the spinning-wheel—to the flail and the reaping-hook? Does he want to pull through the mud to get his mail "every Tuesday and Saturday?" Every day, about the time he is through his dinner, he can see the "Fast Mail" fly past the station and leave him a copy of this "mornings" Tribune or Times, and take up letters for the west. And mark you, we live in the country—with all its "isolation" and "loneliness." It is the most countrified of country places. We have no village, no store, no tavern. Our railroad station and post-office is in a field, w no public road to it. But we have a telegraph there, and messages are going and coming, "tick, tick, tick," incessantly. One end of that wire is in the office of the *American Agriculturist*, at 245 Broadway, New York. It is in the busiest center of that busy city. There is the noble new Post-office Building, the City Hall, and the old Park. We can see nearly all the newspaper offices, and to me there is a fascination in looking at the places where the papers one has read for years, are published. The Christian Advocate, the Evangelist, the N. Y. Observer, the Methodist, the Christian Union, and the Independent, are associated with the Sunday quiet of a country home, and one hardly expects to find them in this dense and bustling crowd. But they are all here, and many more. Then look at that stream of people on the side walks! How fast they walk; how well they are dressed; how animated and intelligent they look! And then see the omnibuses and carriages! One needs a keen eye and active legs to get from one side of Broadway to the *American Agriculturist* office on the other side. And then on the left-hand side of the building, just inside the door, sits a pleasant looking young lady, and I write a few lines on a slip of paper with a pencil, and presently, while the Deacon is digging potatoes in the field near the station, 400 miles away in the country, a little envelop is handed him, and he reads "Good morning, Deacon. Tell Willie to meet me to-night." I shake hands with the good people at the *American Agriculturist* office, take the special express, and soon we are spinning along the side of the noble Hudson River, at the rate of 40 miles an hour; we cross the bridge at Albany, pass along the Mohawk Valley, get a good supper at Syracuse, and in two hours more Willie meets me and I am soon at home, and after a good night's rest, am able the next day to dig as many potatoes as the Deacon.

Now the age in which such things are done, and done every day, and done without thinking how wonderful they are, is a very different age from that of our fathers, when this same journey from New York to the "Genesee Country" would have been a most serious undertaking. What would have been extravagant then, is not extravagant now. We waste less time. We can do more work. Or rather, if we work as hard as our fathers did, we can *accomplish* much more. It does not require as much labor to make a suit of clothes, and consequently the same amount of work will enable us to clothe ourselves better and more comfortably. If the ladies will work as hard, they can afford to dress better than their great-grandmothers. The same amount of labor will light a house better with kerosene oil, than pine knots or tallow candles. The same amount of labor will furnish more and better meat. "Hold on there," said the Deacon, "I don't see how you can make that out. We used to get meat a good deal *cheaper* than we do now." That is not the point. What I assert is that it *costs less labor* to produce good beef, mutton, pork, poultry, eggs, milk, butter, and cheese, than it did a hundred years ago. And consequently *if we work as hard*, we can afford to live better.

"That would be true," said the Deacon, "*provided* we could raise these articles with less labor, but I do not seem to see it." Will not the mowing machine, the tedder, the horse-rake, and the unloading fork enable up to cut the grass, cure it, and put it in the barn with less labor? Will not the steam engine or the horse-power enable us to cut it into chaff, and to feed it out with less waste, and to great advantage? Will not our improved plows, harrows, rollers, drills, huskers, cultivators and shellers, enable us to prepare, plant, cultivate, and harvest an acre of corn with less labor than formerly? Are not our cows as good milkers; are not our churns as good. Are not our processes of cheese making better. And can not we, therefore, produce a pound of beef, butter, and cheese, with less labor than in the good old days of our great-grandmother, of whom it could be truly said:

"She seeketh wool and flax, and worketh willingly with her hands. She riseth also while it is yet night, [that is before daylight], and giveth meat to her household, and a portion to her maidens. She layeth her hands to the spindle, and her hands hold the distaff."

Now mark the result of this industry: "She stretcheth out her hand to the poor; yea, she reacheth forth her hands to the needy. She is not afraid of the snow for her household, for all her household are clothed with scarlet. She maketh herself coverings of tapestry; her clothing is silk and purple. She looketh well to the ways of her household, and eateth not the bread of idleness. Her children arise up and call her blessed; her husband also, and he praiseth her."

Now if such things could be said of the good women of the past, what shall not be said of the good women of the present. They have greater opportunities for usefulness. The sewing machine is better than the spindle; an apple parer better than the distaff. The same labor will produce far more comforts now than in any previous age. It is not extravagant to enjoy the fruits of our industry. A farmer recently remarked that his daughter went to church on Sunday with a "hundred bushels of oats on her back." He forgot that she often milks half-a-dozen cows, and makes all the butter, and it would take several silk dresses to pay for all she does for his comfort and profit. And there is more than one young farmer who would be willing to take her off his hands.

You and I, Deacon, must trust the young people. I dislike to see the boys smoking cigars and driving fast horses, but we shall not cure them by scolding. The country is not going to the dogs, nor our children to the bad. We have much to be thankful for.

Half our troubles are imaginary. The remedy for these is hope; and the remedy for the other half is work. Work will give us hope, and hope makes labor easy. What will not a little extra work do for our comfort, and the comfort of our families? One-half hour's extra work a day, would make all the difference between a dispirited household and a home of comfort. Let a poor discouraged man try it. Brooding over our troubles does no good. It will pay no debts. Work will make a creditor wait. And let me say right here, that I do not think farmers, as a class, or their families, are given to extravagance in dress, or in their style of living. Just now the tendency is all the other way. They are spending less than usual. And it is a capital time to make improvements. In periods of general depression, like the present, some people seem to think that the world is coming to an end. Be that as it may, it is wise in us to continue plowing and sowing. It is a great thing to feed and clothe the world. We have had a good breakfast, and shall soon want a good dinner, and will not want to go to bed without supper, and to-morrow we shall want another breakfast, dinner, and supper, and so on during all the days of the week, and the month, and the year. There are 365¼ days in the year. Suppose we should forget that one-quarter of a day, and the world on the first of January next, should wake up and find no breakfast. There would be a fine rumpus when the world found that it had to wait six hours for dinner on an empty stomach. Why, then, need a farmer fear! His products will never go out of fashion. Bread, milk, butter, cheese, beef, mutton, pork, poultry, eggs, fruit, and potatoes, will be wanted *every day*, until the end of time. And it is our duty and our interest, to see that the world does not come to an end for the want of food?

"I don't see," said the Deacon, "what all this has to do with the extravagance of the age. You may say what you will, but I tell you farmers can't stand it. We are spending more money than we can earn," and the old gentleman pushed up his hat and left, without giving me a chance to say more. I sometimes feel just as the Deacon does on this subject. But I think that at this time farmers need to take a more hopeful view of the future. Our products will certainly be needed, and good farming will pay in the future as well as it has paid in the past—and I think a good deal better. We should be more economical in time and labor, rather than in food, fuel, light, and clothes. We should live well, and work to the best advantage.

I do not mean to say that farmers do not work hard enough. They often work too hard. I know intelligent, well-to-do farmers who do all their own work in the winter. And they boast of it. Nine-tenths of the work they do could be done, with a little superintendence and direction, by a man who would be willing to work for little more than his board. Surely this is false economy. There are many things on a farm that you can not hire done, you must do them yourself—or *see* that they are done. I am sure it would pay such a farmer as I have in my mind, to get a man to help him this winter to do most of the hard work. And let the farmer himself spend his time in seeing that everything is convenient about the house, in the wood-shed, and in the cellar. Let him look to the stock. He can save fodder and grain enough to more than pay for the board and wages of the man. But this is not half the advantage. The stock will receive more care, and all their little wants will be supplied. Said a farmer to me last spring, "When we were drawing out manure, I let the boys drive to the lot and I stayed in the yard, because I could put on better loads. And the cows commenced to give more milk right off." Now this man is one of the best farmers in the county. He keeps a thorough-bred Short-horn bull, and raises capital grades. He has a splendid barn, that I have several times thought ought to be figured in the *American Agriculturist*. He thrashes by steam; cuts his straw and hay, and corn-fodder, with a big feed cutter, having an elevator attached, and is one of our model farmers. But there is no nonsense about him. He is no fancy farmer. He is up by four o'clock, (which is the worse thing I know about him), and looks after his stock. During the day he is in the field or in the woods. He reads the *American Agriculturist*, and I believe gets up a club for it. In short, he is an active, industrious, intelligent, experienced farmer; and yet when he is piling manure in the yards, his cows give a perceptible increase in their milk. Why? One of his handsome grade Short-horns that he is so proud of, seeing him around, goes up to him and says, as plain as a cow can say, "Give me a lock of hay," and he gives it to her. Another says, "Mr. Stevens, don't you think that rack wants cleaning out," and on looking, he finds to his surprise that there is a lot of dirt, and wet hay seeds, and rubbish at the bottom. He scrapes it all out and rubs it clean with some straw, and as soon as his load is filled, and while he is waiting for the next wagon, he gets a little feed and puts it in the rack, and the cows eat it and feel grateful. Between the next loads he takes the curry-comb and brush, and gives one of the cows a good cleaning. The other cows come round him, and he has a gentle word and friendly pat for each of them. He is a good looking man, and the cows like to look at him. He is a gentleman, and his presence has a soothing effect. They chew the cud of contentment and peace. As he goes past

the pump, he asks the cows if they want a little fresh water. They had not thought about it, but they drink a little just to please him. And so it goes on all day. No wonder the cows give more milk at night.

You will notice the same thing in the sheep-yards. The sheep soon know you and like to have you around. And you will not be with them long without seeing something that you can do for their comfort. If you doubt it, go into the yard and see. Even such a simple thing as bedding the sheep, is rarely done judiciously. A sheep will not willingly lie down in its own droppings. Shake up the straw, and make it smooth and level over the whole shed or yard. About the racks you will find more straw than is needed. Shake this out over the yard. The less straw you use, and yet give the sheep a clean bed, the better. You will be surprised, if you shake up all the old straw and spread it out smoot . over the surface, how little fresh straw is needed to make the shed or yard comfortable.

Some years ago I had an unusual quantity of straw, and I used it without stint about the sheep-yards. My sheep, though well fed, never did worse. Now that I keep so many pigs, I am short of straw for bedding, and have to use the greatest pains not to use more than we can possibly help in the sheep yards, and my sheep never did so well. We use more or less of the soiled straw from the sheep yards, as bedding for the pigs, and bed the sheep with the straw they leave in the racks and boxes. The racks are always cleaned out, or ought to be, before fresh feed is added. If they leave any hay, it is taken out and thrown into a heap on the barn floor, and is pushed down to the cows in the cellar underneath.

If I should ever be able to build such a barn as I want, I would keep as many sheep as I do now, and more cows. All the fodder should be cut into chaff. The sheep should be in the second story, and the cows underneath—pigs also, though in an entirely separate apartment. I would then steam or scald all the hay, straw, stalks, etc., that the sheep left, and feed it warm to the cows. The sheep do not want to eat up straw or fodder, or even hay, entirely clean. They like to pick out the best—and I am willing they should, provided the cows eat up what is left.

My sheep would highly approve of Prof. Atwater's deduction from the German experiments he has been giving us an account of in the *American Agriculturist;* though I think they would very much dislike to be the subjects of the experiments themselves. They would not like to be confined [see Sept. *American Agriculturist*, page 334] to 2 lbs. of hay per day. They would eat it, and with it more or less of their own previously stored up flesh and fat. And I should think a couple of pounds of potatoes would be digested in preference to the albuminous matter in the dry, hard stalks of the clover hay. And so also when sheep were fed 2¼ pounds of vetch hay, per day, they digested enough to keep them alive, with or without help from their own stored up fat. At a later period they were allowed 1½ lbs. of beets, in addition to the hay, and still later 3½ lbs., and still later 4¾ lbs. each, per day, and still later were fed nothing but their 2¼ lbs. of vetch hay. And "the result was," as Prof. Atwater remarks, "that whenever beets were used, less of the coarse food was digested." The sheep found the beets much easier to digest than the dry, coarse stalks of the hay. As I have said, my sheep would not like such experiments; but they would highly approve of the Professor's prescription, to wit: "Use potatoes, beets, or other roots, with hay, straw, or other coarse fodder; but at the same time feed oil-cake, bran, bean-meal, or malt-sprouts." And I *think* Professor A. will allow me to add, if you have none of these, give your sheep a pint of corn each, per day, with or without the potatoes or roots. It is not as nitrogenous as the bran, but during this cold winter weather the sheep will be very grateful for it. At the same time let them have all the straw, or stalks, or corn-fodder they can be induced to eat, but do not compel them to eat up every dry stalk. There is some nutriment in saw-dust, but we want our sheep to be better employed than in trying to extract it. It is a great waste of digestive force. As I have frequently endeavored to show, if a farmer who keeps improved animals, could grow a ton of grass or hay which contains as much nutriment as two tons, the one ton would be worth *much more* as food, than the two tons. What we want is to get a food of which the animal can eat as much as he can digest, and digest as much as he can assimilate. I hope Prof. Atwater will take up this branch of the subject. He has given us much valuable information in regard to the most economical way of feeding animals, when the object is merely to keep them alive and healthy. This is an important matter; but much as I like good animals, I do not want to keep them merely to look at. I want them to be doing something. And so I would respectfully ask Prof. Atwater to give us in the *American Agriculturist* for 1876, the results of the German experiments in feeding cattle, and sheep, and pigs, where the object is to make the animals grow and fatten. I can promise him thousands of attentive and interested readers, who will gladly receive and act upon his suggestions.

Hay and Grain Ventilators.

BY L. D. SNOOK, YATES CO., N. Y.

During the hurry and bustle of haying and harvest many loads of fodder are placed in barns, sheds and stacks in a damp or not sufficiently cured condition, causing must, mildew, and consequent loss. I do not advocate the hauling of grain or hay in a damp condition, but offer a few suggestions to those who desire to save their produce at the least expense when it is unavoidably hauled to the barn in an improperly cured condition. When hay or grain is hauled and put away in an uncured or damp state, it will ferment and heat, and if there is not a way of escape for the vapor and the heated gases, more or less injury may ensue. This may be prevented by using ventilators in the stack, or barn, that will admit a supply of fresh air by which the heat may be carried away as fast as it is produced. The fermentation then will do no injury.

In fig. 1 is shown the manner of constructing a "sectional ventilator" for barns. A hole is cut in the center of the floor upon which the hay is to rest. Over this is placed in an upright position a long slatted box (shown at *A*), which, for convenience, should be about eight feet long, ten inches wide, and eighteen inches broad, with slats of any convenient width placed one inch apart. As the hay or grain is filled in to near the top of the first section, another (*B*) is connected with it, and so on until the roof be reached, if need be. This arrangement in sections is designed specially for barns in which the floor is used for other purposes during part of the season, hence I use a trap-door, or something in place of it, which should fill the hole as soon as the last section is removed. Where it is practicable, permanent ventilators should be used, of

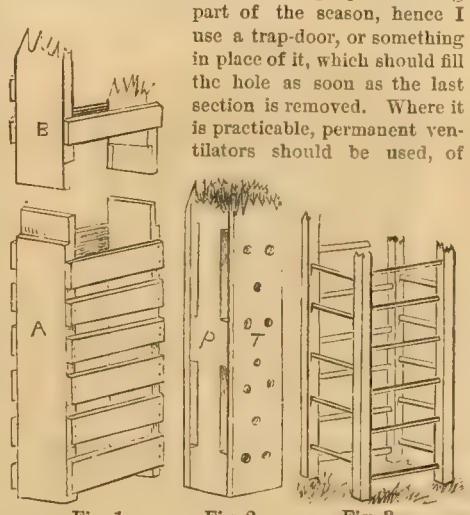


Fig. 1. Fig. 2. Fig. 3.

which two forms are here illustrated. Fig. 2 is a board ventilator, and should be made of eight or ten inch stuff, being nailed so as to break joints, connecting the floor with the roof, two feet of one side being left off at the top for the more ready escape of heated air. The sides are bored with 1½-inch holes a few inches apart, as at *T*, or sections one inch wide and a foot long are made in the side, as at *P*. In fig. 3 is given a more expensive, yet neat and convenient ventilator. It is made some-

Fig. 4.—TUBULAR VENTILATOR.

what like a ladder, and should be the full hight of the hay; the inside diameter should be at least fourteen inches, but two feet would be better. Most farmers have lying about their premises worn out chain or force-pump tubing, that can be put to good use by boring along each side inch holes, as shown in fig. 4. These may be used by placing them either upright or crosswise in the hay or

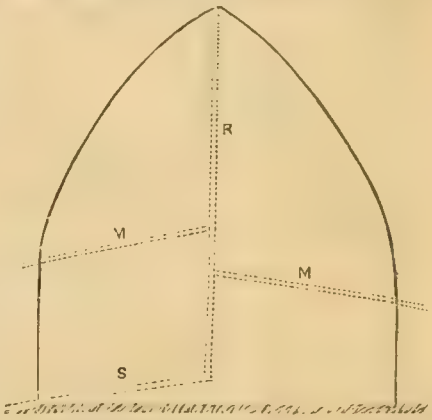


Fig. 5.—VENTILATOR FOR STACKS.

stack, always placing the outer end the lowest, for conveying cool air to the center. A method of ventilating stacks is shown in fig. 5. For this kind of ventilator, the tubing just described will be found very useful; or a substitute is easily made by nailing four-inch strips together in the form of a box, always placing the foundation pipe, *S*, near the ground, and its inner end at least a foot above the outside one, and connected with one upright

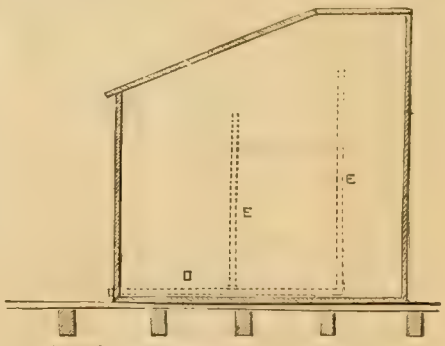


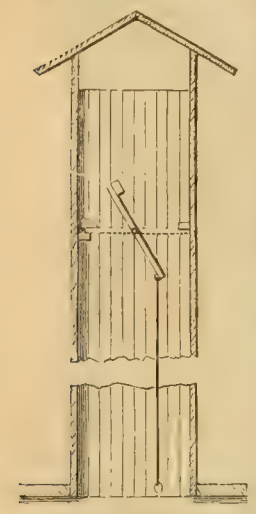
Fig. 6.—VENTILATOR FOR GRAIN-BINS.

section, *R*. Should the stack be found quite damp, side ventilators, *M*, *M*, should be placed at the angle shown. By using this precaution, corn-stalks can be stacked with perfect safety. In fig. 6 is shown a plan of ventilating grain-bins. Along the bottom and projecting outward is placed a few feet of wooden tubing, *D*, connected by short upright tubes, *E*, *E*, all of which are pierced with small holes; and old tin water conductors, or even lead-pipe, can be used to good advantage for this purpose, always remembering that if the cool outside air can reach the center of the hay stack or of the contents of the bin, no fear need be entertained from heating in the vicinity of the current.

LINCOLN SHEEP.—The fine flock of Lincoln sheep formerly owned by Mr. Richard Gibson, of Canada, has been purchased by Col. W. S. King, of Minneapolis, Minn. Col. King's flock of Lincolns is now the largest and finest in America. If his Lincolns thrive as well as his Short-horns and Ayrshires, they will soon acquire the high reputation in this country, which this fine breed of sheep deserves.

Ventilating Trap for Stables.

Many a stable, cow-shed, or pig-pen may be greatly improved by the addition of a ventilating tube through the barn and roof above them. At this season ventilation should be well provided for. There is much disease prevalent amongst stock. The majority of the horses in the northern states, are suffering from influenza, fortunately of a mild description. Disease is frequent amongst cattle and pigs, and many deaths are continually reported. These diseases are in a great measure caused or made worse by foul air and unwholesome quarters. Unwholesome influences more quickly affect the blood through the lungs, than through the digestive organs, and foul air is productive of more evils than many persons are ready to suspect. But ventilation should not be effected without judgment. There is a possibility of having too much of a good thing, and it is unhealthful to an animal to be compelled to stand in a constant current of cold air. To be perfectly safe, there must be some means of controlling these currents. An easy method of effecting this, is by means of a ventilating tube, furnished with an air-trap that may be closed when high winds or storms occur. The tube is made to pass from the stable through the roof of the building. A valve, as shown in the illustration, is fixed in the tube, upon an axle or rotating bar, so that it may be opened by a cord, which hangs down into the stable within reach, and may be fastened to a hook. A small piece of lead is attached to the valve, the weight of which closes the valve when the cord is loosened. The dotted lines show the position of the valve when closed, and the manner in which it lies against the cleats upon either side of the tube. To be fully serviceable, a ventilating tube should not be more than a foot in diameter, and for a large stable several may be provided at convenient points.



VENTILATING TRAP.

How to Build and Fill an Ice-House.

At this season inquiries come from all quarters about cutting and packing ice, and building ice-houses. We have heretofore described the methods of cutting ice, and the construction of some kinds of ice-houses and cold chambers, for preserving meats, milk, fruit, etc. Those who wish for information as to those matters, may find it in the *American Agriculturist* for Oct., 1870, Nov., 1871, Jan., 1872, and Oct., 1874. At present we propose to give some general directions for cutting ice, building a cheap, simple, but useful ice-house, and storing ice in such a way that it may be preserved without waste during the hottest summer weather. Ice should be cut with a saw, (not with an ax,) into blocks of regular size, so that they will pack into the ice-house solidly and without leaving spaces between them. If cut in this manner, ice will keep perfectly well, if not more than three inches in thickness; but a thickness of six inches at least is preferable. It should be cut and packed in cold, freezing weather, and if, as it is packed, a pailful of water is thrown over each layer to fill the spaces between the blocks, and exclude the air, it will keep very much better than otherwise. For a day or two before the house is filled, it is well to throw it open in order that the ground beneath it may freeze, and it may be left open for a few days after it is filled, if the weather continues cold. The house should be finally closed during cold, dry weather. A cheap ice-house is as effective, if properly constructed, as the most costly one. There are some general principles to be observed in the proper construction of any kind of ice-house, and all else is of secondary importance. There must be perfect drainage, and no admission of air beneath; ample ventilation and perfect dryness above; and sufficient non-conducting material for packing below, above, and around the ice, by which its low temperature may be preserved. The best packing consists of saw-dust, either of pine or hard-wood, spent tan-bark, charcoal powder, or what is known as "braize" from charcoal pits or store-houses, oat, wheat or buckwheat chaff, and lastly, and of least service, cut-straw, chaff, or marsh hay. The cheapest ice-house may be made as follows: The foundation should be dug about eighteen inches to two feet deep in a dry, gravelly or sandy soil. If the soil is clay, the foundation should be dug two feet deeper, and filled to that extent with broken bricks, coarse gravel, or clean, sharp sand. To make a drain beneath the ice of any other kind than this would be risky, and if not made with the greatest care to prevent access of air, the drain would cause the loss of the ice in a few weeks of warm weather. Around the inside of the foundation are laid sills of 2×6 plank, and upon this are "toe-nailed" studs of the same size, 10 feet long, at distances of four feet apart. Around these, matched boards or patent-siding are then nailed horizontally. A door frame is made at one end, or if the building is over 20 feet long, one may be made at each end for convenience in filling. When the outside boarding reaches the top of the frame, plates of 2×6 timber are spiked on to the studs. Rafters of 2×4 scantling are then spiked on to the frame over the studs; a quarter pitch being sufficient, or if felt roofing is used, a flat roof with a very little slope to the rear might be used. In this latter case, however, the hight of the building should be increased at least one foot, to secure sufficient air space above the ice for ventilation. The roof may be of common boards or shingles, or of asbestos roofing, but the roof must be perfectly water-proof, and should have broad eaves to shade the walls as much as possible from the sun's heat. The outside of the building, roof included, should be white-washed, so as to reflect heat. The inside of the building should be lined with good boards placed horizontally, and the space between the two boardings should be filled closely with the packing. If packing material is scarce, air-proof lining, such as is used in the walls of dwelling houses, may be substituted for it, but the joints in this case should be carefully made, that the outside air may be excluded, and that within the wall be kept stationary. In fig. 1 is seen the frame here described, closed in on one side and one end, and partly boarded on the other side; the front being left open to show the manner of making the frame. In fig. 2 is shown a section of the house filled with ice; the lining between the walls is shown by the dark shading. The packing around the ice should be a foot thick at the bottom and the sides, and two feet at the top. There should be a capacious ventilator at the top of the house, and the spaces above the plates and between the rafters at the eaves will permit a constant current of air to pass over the upper packing, and remove the collected vapor. The method of closing the doors is shown at fig. 3. Boards are placed across the inside of the door as the ice is packed, until the top is reached. Rye or other long straw is tied into bundles, as shown in the illustration, and these bundles are packed tightly into the space between the boards and the door. The door is then closed. We have found these straw bundles to seal up the door-space of an ice-house in summer as well as the door of a root-cellar in winter, very effectively. When the house is opened in the summer, and the upper packing is disturbed to reach the ice, it should always be carefully replaced, and the door closed up again with the straw bundles. The bundles of straw may be fastened together by means of two or three cross-laths, and they can be removed and replaced very readily. The material required for a house such as is here described, 20 feet long, 16 feet wide, and 10 feet high, and which will hold over 60 tons of ice, is as follows: 324 feet 2×6 studding; 12 rafters 2×4, 12 feet long; 576 feet matched boards; 720 feet boards for lining; 480 feet roofing boards, 3,000 shingles, or 480 feet of roofing; one batten door, hinges and nails. About 25 wagon loads of sawdust or other non-conductor would be needed for a house of this size.

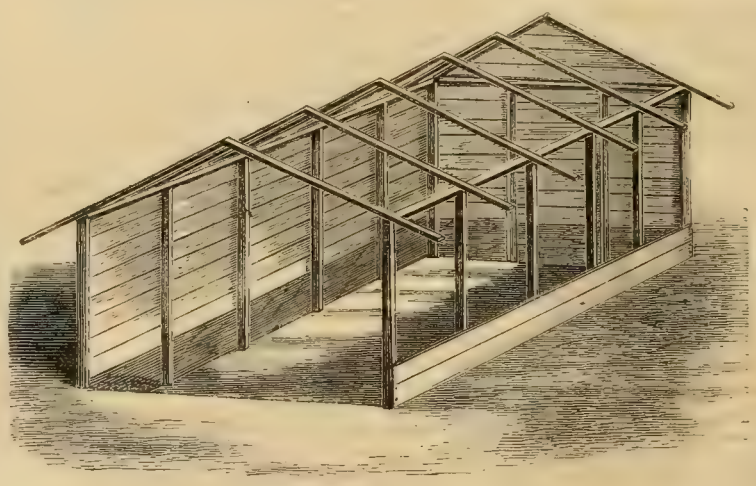


Fig. 1.—FRAME FOR ICE-HOUSE.

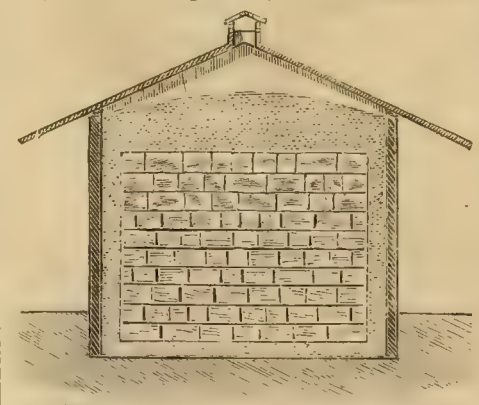


Fig. 2.—SECTION OF ICE-HOUSE FILLED.

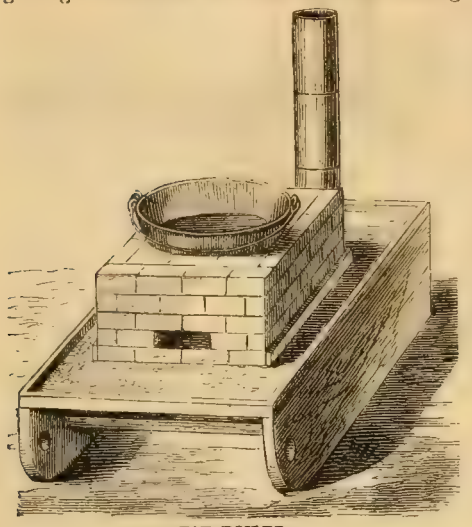
Fig. 3.—DOOR FOR ICE-HOUSE.

FEEDING SMUTTY CORN.—This year's corn crop is greatly affected with smut, which is a usual accompaniment of a wet season at earing time, such as we have had this summer. The smut of corn is a fungus, in some respects allied to the ergot of rye and other grasses, and has been known to produce

abortion and violent inflammatory diseases. The careless feeding of corn in the husk to stock is dangerous, as smut may be very easily swallowed by the animals. In husking corn, all smutty ears should be kept by themselves, and used for pig feed, boiling them before feeding them, and throwing away the water in which they were cooked.

To Make a Tar-Boiler.

A correspondent asks for a safe method of heating tar for use in making a cement roof, and for other purposes. The apparatus shown in the engraving is both safe and convenient for heating

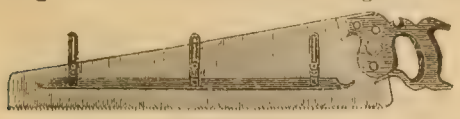


TAR BOILER.

common tar, or gas tar, etc., and is readily moved about. It consists of a common sap-kettle, or cauldron, set in brick-work, and all mounted upon a sled built of heavy plank; and a hole is bored in each runner to facilitate its removal from place to place. To set the kettle, a space of the proper size for the brick-work is marked off by spiking strong cleats to the floor of the sled; within this a foundation is laid of bricks, well bedded in common mortar; the brick-work is then built up high enough to support the kettle, and leave a fire-place below it, and a joint of stove-pipe is built in at the rear. All around the top of the sled are nailed strips forming a frame, to hold a coating of clay, with which the floor is covered, to prevent it from being burned. The apparatus should be stationed at a safe distance from buildings; and should the tar or the sled take fire, it may be easily put out by throwing earth upon it. In carrying hot tar, a pail well hooped with iron should be used.

Gauge for Saws.

In cutting tenons or in other work, where a saw-cut to an exact depth is to be made, a gauge will be found very useful. This may be fitted to any saw by drilling two or three holes in the blade, and fastening it in the desired position by thumb-screws, or common screws with a winged nut. The gauge may be a plain, straight-edge of wood, with slots cut in it, by which the hight may be regulated, and through which the screws may work into a common or a winged nut. A mechanic who can work metals, may very easily make a neat gauge of brass, with a scale upon it, as a guide in the setting. Such a gauge, with the slots, we have seen sawn out of heavy sheet brass, with the small saws of the Fleetwood Scroll Saw machine, the scale being made of fine saw cuts in the edges of the



SAW-GAUGE.

slotted portions of the gauge. The holes in the saw-plate were also drilled with the drilling attachment of the same machine. A gauge like this will be of great use to cabinet makers and amateurs.

Scalding Hogs.

A correspondent sends us from Albion, Ill., the following excellent plan for scalding hogs, with a sketch of his scalding vat, which we give in fig. 1 of the accompanying engravings. This vat is made of two-inch pine plank, and is 6 feet long, 2 feet high, 3 feet wide at the top, and 2 feet at the bottom. The bottom is made of galvanized iron, and several cross-pieces are fixed one inch above this bottom, to support the weight of the hog or to protect the bottom from injury. Two holes are bored near the top on one side, into which the ends of a rope, nine feet long, are fixed so as to form a loop. The vat may be prepared for use either by setting it up upon bricks or stone-work, or by placing it over a trench in the ground, and arranging a smoke-pipe at the further end. The vat is two-thirds filled with water, and a small fire made under it. When the water is so hot that the hand can only be held in it for one second, it is ready for use. The hog, having been slaughtered, is laid upon the bench at the side, with its feet next to the vat. The rope-loop being then firmly held, the hog is rolled upon it and dipped beneath the water. After it has remained there a short time, it is raised to be "aired" for half a minute, and then replaced in the water until the hair will slip. Then, by hauling on the rope, the hog may be rolled on to the table to be scraped. Two men are able, in this

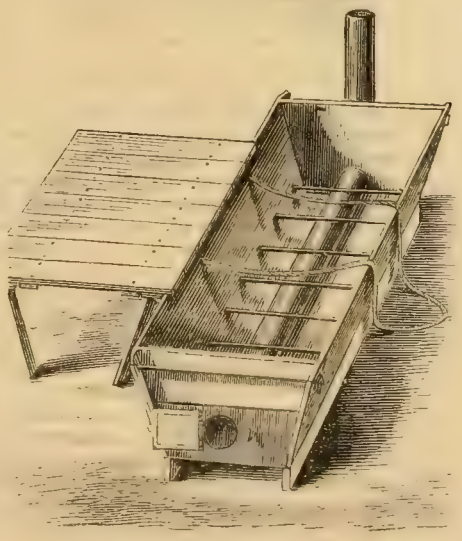


Fig. 1.—VAT FOR SCALDING HOGS.

way, to handle large hogs. The heat is kept at the proper degree by adding cold water, or by increasing the fire. This vat costs seven dollars for materials and carpenters' wages. It would be very convenient to have a few of these vats in a neighborhood, and those who could not afford to procure one of their own, could hire the use of one for a small sum. Fifty cents each from several neighbors would pay a good interest on the cost of one each year. We have seen a vat similar to this fitted with a temporary bottom of boards, and made to do regular service during the whole year; when not in use at the slaughtering season, it served as a trough for mixing cut-feed, for which it is well adapted.

A somewhat different vat is shown in fig. 2. This we have seen in use where it was highly approved. It has the merit of being complete in itself, and can be put into a wagon and moved and set up in a moment. The fire-tube is made of sheet-iron, the joint at the edges of the sheet being folded in the same manner as the edges of a stove-pipe, and the joint is cemented with a paste of wood-ashes and lime. The tube should be about eight inches or a foot in diameter, and terminate in a smoke-pipe,

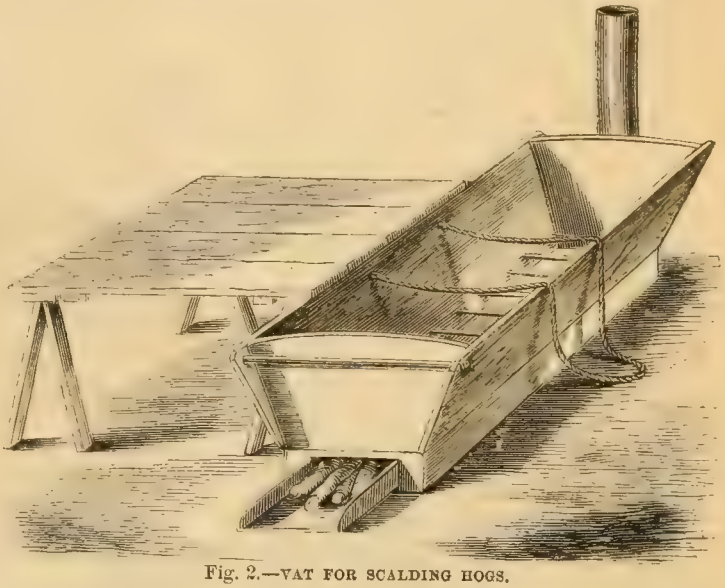


Fig. 2.—VAT FOR SCALDING HOGS.

and so fitted that it is entirely surrounded with water A very little fire serves to heat a vat full of water. It is used in exactly the same manner as the preceding one. By making a false bottom of boards, bored with a number of small holes, corn or potatoes may be boiled in it for fattening hogs.

To Cure a Choked Cow.

Now that it is the season for turning cows into corn-stubbles where turnips have been grown, or into orchards where refuse apples have been left, or for feeding roots in the yard, we occasionally hear of cows being choked. There are in use several methods of relieving animals from obstructions of the gullet, some of which are dangerous, and on account of the possibility of lacerating the gullet by the force used, as bad as the evil they are intended to remedy. A very effective and harmless practice is common amongst some of the Scotch farmers, whom we have met in the west, they having brought it hither from their own country, where it is much in use. A round piece of wood, two inches thick and seven inches long, is fastened to two side-pieces, eighteen inches long, three-quarters of an inch thick, and two inches wide. Several holes are bored through the round piece, and a hole at the end of each of the side-pieces. This contrivance is shown in the engraving. To use it, the round piece is put into the mouth of the cow that has become choked, and a rope being passed through the holes in the side-pieces, it is fastened to her horns, in the manner of a bridle. The animal breathes through the holes in the bit or round piece, and in her effort to rid her mouth of this, a great flow of saliva takes place, and when she holds up her head, this runs down her throat and assists in causing the obstruction to be swallowed or ejected. Besides—and this is the most important—it entirely prevents the animal from becoming hoven, and thus dying from suffocation.

HALTER FOR CHOKED COW.

PROLIFIC CORN.—Milton Rude, of Weedsport, N. Y., sent to the Elmira Farmers' Club a stalk of

corn having three ears upon it. This was surpassed by W. H. Van Sickle, of Hill's Branch, who sent three stalks with altogether thirteen ears, most of which had good corn upon them. It is doubtful how far we may go in improving the yield of corn, but it does not seem at all impossible or improbable that we might, by continued selection, produce a variety that would bear two good ears at least, to a stalk. With such corn, planted in hills 3 feet apart, and with three stalks to a hill, we could produce 290 bushels of ears per acre.

Profit from Good Stock.

Mr. Warnock, a well known breeder of Shorthorns, reports the produce from "Easter Day," a cow nine years old, and costing $350 in 1868, as follows: "Airdrie Belle" sold for $1,700; "Airdrie Belle 2nd," $900; "Airdrie Belle 3rd," $940; "Rosette," $750; "Cambridge Rose," $800; "C. Rose 2nd," $1,000; "C. Rose 4th," $350; and three bulls sold for $1,150. Another cow, "Miss Jackson," purchased with her calf "Rosa Jackson," for $600, in about the same length of time produced stock which sold for $6,488. The total profit on the two cows amounted to $13,470, from which the cost of their food, care, and the interest on the money, would have to be deducted. Although this stock is what is called fancy stock, yet the result in the case of ordinary good stock would be the same, but in a less degree. There are cows, sheep, and pigs, which are worth for actual marketable material, many times as much as common poor animals would be. Yet they cost no more to keep. It is this fact which makes the basis of the value of the better class of pure bred stock. There will always be a demand for good breeding animals, at a price far above their value as dead meat, because the value of the produce increases in such an enlarged ratio. If we double $20 and the product, four times, we have $320. But if we take $100 and do the same, we have $3,200. The difference is $2,880, or 36 times the first difference, instead of 4 times. This gain in the value of the produce, is the secret of the high value set on improved stock, which costs no more to keep—often in fact it costs less—but which makes a vastly greater profit in proportion to its first cost, than ordinary stock. And the demand for good stock can not be supplied in our day.

HOW SOME "BUTTER" IS MADE.—While we do not believe all that is said about the great quantities of spurious butter that is made from fat or "oleo-margarine," and know that the statement, that it can not be distinguished from real butter by the eye or taste, is untrue, from our own personal investigations and knowledge; yet we are satisfied that there is too much of this adulteration carried on. As an opponent of all frauds, we can not refrain from telling what we know of this so-called

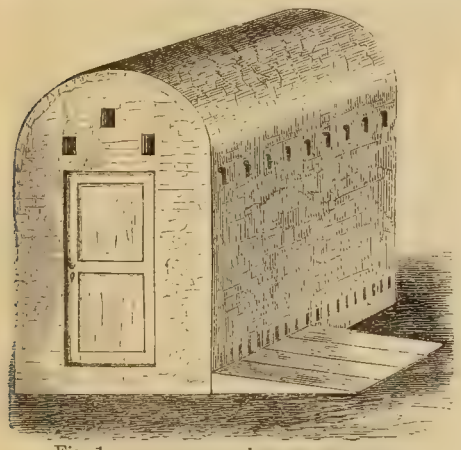


Fig. 1.—MR. CROZIER'S SMOKE-HOUSE.

butter, now and then, to put both honest dairymen and unsuspecting consumers on their guard. The fraudulent butter may be known by a want of the smooth melting taste of real butter. It feels granular in the mouth, just as candied honey, before it melts, and it melts more slowly than butter. If honestly made there can be no objection to it, if it comes openly, bearing its own brand upon it, before the public. There is a place for it no doubt upon the tables of a class of poor consumers, who can afford nothing better. But in the interest of these poor people even, it is to be protested against. For a thing that begins as an adulteration, will always surely end in being adulterated itself. This is as absolute a certainty as that the road to destruction is down hill and easy. We learn from an English paper that this "butter" is there made to be sold to poor people, in large quantities—as indeed it has been for many years—but now from the vilest materials. Ground bones, waste from slaughter houses and "knacker's" (horse slaughters and renderer's) yards, the contents of old bone gatherer's bags, and other rubbish, are boiled down and the fat skimmed off and made into this *oleo-margarine* butter. As the first process was learned from Europe, of course all its modern improvements can not fail to be adopted in time.

Improved Smoke Houses.

The accompanying illustrations are descriptive of two kinds of smoke houses, which have some

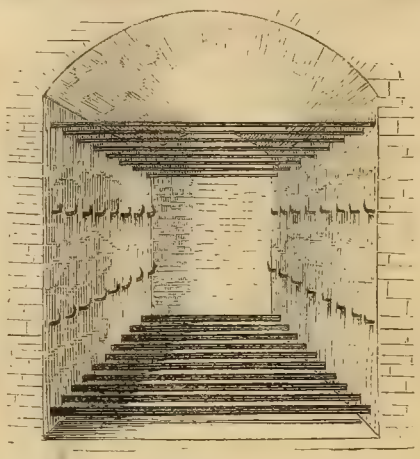


Fig. 2.—INTERIOR OF SMOKE-HOUSE.

advantages not possessed by any we have heretofore seen or described. Fig. 1 is an engraving of a brick smoke house recently built by Mr. William Crozier, at Beacon Farm, Long Island. It is built over an ash-pit or cellar about six feet deep, the entrance to which is by way of the door shown at the side of the building. The roof is arched, and there is no wood about it, except the doors. The floor of the house is made of narrow iron bars, 3 inches wide, and a quarter of an inch thick, set on edge about two inches apart, so as to form a grating. The ends of these bars are seen set in the brick at the lower part of the house. These bars, or the grating which they form, are used to lay side pieces of bacon upon during the smoking. The hams are hung upon round iron bars, stretched across the upper part of the house; the ends of these bars bent down, and thus forming stays or braces to the building, are seen in the engraving. A few spaces are left in the front of the house, over the door, for ventilation. The interior of the house is shown at figure 2. The hams are hung upon wire hooks, (figure 3,) which slide upon the rods. This house required 2,000 bricks, and the labor of two masons for one day and a half. Figure 4 represents a section of a smoke house of wood, which is very cleanly in use, there being no fire, and consequently no ashes upon the floor. The floor is made of cement, or of hard brick laid in cement or mortar. Either of these floors will exclude rats, and may be washed when necessary. The fire ovens, made of brick, are built on each side of the house, or two of them may be built at the rear end. They are built upon the outside, but spaces are left between the bricks on the inside, through which the smoke escapes. The outer part of the oven is open at the front, but may be closed by an iron door, or a piece of flat stone or slab of

Fig. 3.

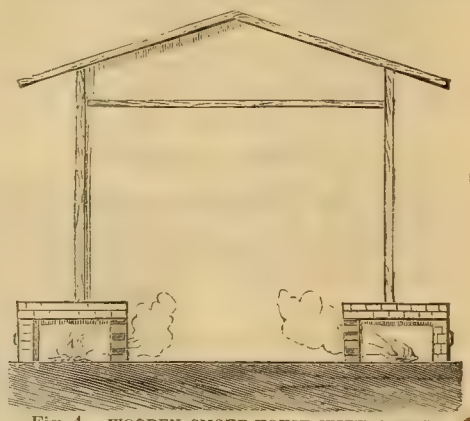


Fig. 4.—WOODEN SMOKE-HOUSE WITH OVENS.

cement. When the fire is kindled in the ovens, the doors are closed and fastened, and the smoke has no means of escape except through the inside spaces. From being so confined, the fire can not burn up briskly, and smoulders slowly, making a cool and pungent smoke. In any smoke house, the less brisk the fire is kept, the more effective is the smoke, as the slow combustion of the wood permits the escape of most of the wood acids, which give their flavor and their antiseptic properties to the meat. When the fire is brisk, these are consumed and destroyed, and the meat is injured by the excess of heat. We have met with no contrivance which better effects this required cool smoking than this of outside ovens. They may be fitted to any kind of a smoke house, by simply cutting the necessary openings at the bottom of the walls, and protecting the wood work by strips of sheet-iron around the bricks.

How to Improve a Butter Herd.

In a large part of the older states, within easy reach of the large towns and cities, the making of butter is the most profitable use of milk. A few within an hour's ride of customers, or of the railroad depot, can sell milk to advantage. Farmers more remote from market can best dispose of their milk at the cheese factory. These are now so numerous, and so well managed, and the cheese is of so good quality, that there is very little fluctuation in the price, and the business is fairly remunerative. The importation to England and other European countries is so steadily increasing that cheese farmers are likely to be well rewarded for their labors for many years to come. The butter farms lie in the belt between the cheese and the milk producers. They have a good home market, and have the advantage of a personal acquaintance with the families they supply with butter. All the butter they can make is readily taken at the market price, or a few cents per pound above. These families are of the most thrifty and cultivated class, have nice tastes, and are willing to pay for the esthetic quality of butter. They like the high color, the waxy texture, and the delicate boquet of butter fresh from the dairy. They do not like the name or odor of store butter, and will have that which is fresh from the farm if they can get it. These are a very desirable class of customers for any farmer to have. They are able to pay for what they want, and will patronize the butter maker that caters to their tastes. Skilled labor here comes to a good market. It is a good thing for the dairy woman to know that her products are going to a home market where her skill will be appreciated. A sense of responsibility for the utmost cleanliness and skill in the whole process of manufacturing is kept up that it is difficult to maintain where butter goes to a distant market. Farmers who keep butter herds are in a condition to profit immediately by the improvement of their cows. Every thing they can produce in the line of "gilt-edged" butter comes to a hungry market. The

stock kept upon these farms is generally native, improved more or less by selection. Occasionally there is a low-grade Devon, Ayrshire, or Jersey, among them. The most desirable improvement that can be made at small cost is to procure the service of a thoroughbred Jersey bull, and raise the heifer calves from the best milkers. It is about as well settled as anything can be by experiment, that the Jersey is the best breed to transmute grass and other feed into butter. For a given amount of food you get the most butter, and the butter is of the highest quality, and commands the best price in the market. In some of the suburban dairies where pure Jerseys are kept, the butter is engaged to regular customers at a dollar a pound, and upwards. Sixty to seventy-five cents a pound are not uncommon prices for a nice article. Of course, these prices could not be obtained at once by every one who should undertake to make Jersey butter. But such an ideal in the farmer's mind would be a constant incentive to improvement, and could hardly fail to secure better butter, and better prices.

The great objection to this improvement in most cases would probably be the high price of the Jersey stock. If the improvement were made through the thorough-bred bull, it would not be beyond the means of most thrifty dairy farmers. If a man keeps from fifteen to twenty cows, he must have a bull of some kind, and if of his own raising, it must have cost from twenty to thirty dollars in hay and grass alone at a year old. The breeders of Jerseys have an excess of bulls that they make veal of for want of a better market. They may be of good pedigree, but defective in color or points, and so are sacrificed. These bulls could be purchased at low prices, as calves, and would improve the butter qualities of any native herd which they might serve. Frequently Jersey breeders have yearling bulls that they would sell at fifty or sixty dollars. Certainly these prices are not beyond the reach of a thrifty farmer. An infusion of Jersey blood into these butter herds would add greatly to their value. Of course, the same remarks apply to procuring young bulls of any other breed, if in the opinion of the farmer some other is to be preferred to the Jersey.

The End of the Texas Steer.—The end of that ungainly animal, the Texas steer, is near at hand. Soon his long horns and angular frame will no longer be seen. The Short-horn is fast supplanting him. Thousands of bulls of improved blood have been taken not only into Texas, but into Colorado, Nebraska, Kansas, Dakota, and other places where the Texan cow was the only available stock with which to start an improved herd. After the young stock become old enough to breed, the Texan cattle are marketed, and we are now "running the emptyings," so to speak, of the Texans. Even the Indians are improving their Cherokee stock in the same manner. In two or three years more the main bulk of the cattle will be Short-horn grades, and a great and steady demand will be made upon eastern herds for bulls for breeding. Not for fancy stock, but for equally good, but less fashionable, pure Short-horns. The present outlook is altogether in favor of stock raising as the most profitable branch of farming, both in the east and west; and it is certain that there is no other that is less exhaustive to the soil.

Feeding Meal Alone to Dairy Cows.—Mr. L. W. Miller, of Chatauqua Co., N. Y., sends us his pamphlet descriptive of his plan of feeding cows exclusively upon a very small quantity of meal during the winter. At first it would seem that three quarts of corn-meal a day, would furnish a very inadequate ration for a cow. If it should turn out, however, that it is abundant to maintain a cow in perfect health and condition, it will certainly be a great economy in fodder, to adopt this plan. The test of practice, however, must be applied in this case, and theoretical considerations are quite useless. We observe the questionable theoretical support brought to the aid of this practice in the pamphlet, viz., that small concentrated rations are proper, because the food goes directly to the fourth stomach of the animal, (a physical impossibility, by the by), has been recently upset by Mr. Miller himself, who publishes a statement that he has recently slaughtered an animal fed exclusively on meal, and has found the meal (where it might be expected to be found) in the first stomach as well as the others. So that the cow really has a use for her complicated stomach, whether she eat corn-meal or hay, or grass, although at first Mr. Miller was led to doubt the fact when corn-meal was the exclusive food.

English Plows and Harness.—Notwithstanding the weight of English plows and other tools, and the seeming cumbersome character of the harness used in that country, there is a simplicity in their structure, and a solidity and ease in their working, which go far to recommend them, or at least the principles of their construction, to us. English boys of 10 to 12 years of age, commonly harness their teams, rig up their plows, and handle the lighter ones themselves very skillfully. The pins and notches of the heavy swing plows are also changed, when necessary to proper working, with the utmost readiness by these boys; while one of these plows would at first sight puzzle one of our farm boys, as much as a horse collar would some of the city boys, who never saw one put on a horse.

Prospects for Market Gardeners in 1876.

BY PETER HENDERSON.

The past season has been one of such unusual depression in prices, for nearly all garden products, that cultivators are very generally discouraged; many are forced to abandon gardening from necessity, and others though still able to drag on, doubt the propriety of continuing in a business where the hard work of a year has resulted in no profit. In no season for the last twenty-five years have fruits and vegetables sold so low in the markets of New York as in that now closing; and I believe it has been nearly the same in all parts of the country. Berry crops were often sold at not more than the actual cost of picking and freight, while peas and beans did no better. In fact, the average prices of nearly all articles of fruit and vegetables during the months of June, July, and August, of 1875, hardly equaled half the average prices of previous years. Of course there was not only no profit, but an actual loss, and hence the very general discouragement among the many hard working men engaged in the business of gardening. But past experience has given us good reason to believe that the next season, that of 1876, will bring back prices to the average standard, if not better. I well recollect that when the cholera visited New York in 1848, the fiat went forth that fruit and vegetables must be avoided if immunity from the plague was desired. The consequence was a lessened demand, which brought down prices below the paying point, but in the succeeding year, prices went up to even above the average rates, and well compensated the gardeners for the losses of the previous season. There is good reason to believe that the same result will take place next year, more particularly in the vicinity of New York, Philadelphia, and Baltimore, and many of the minor towns within reach of the influence of that great attraction, the Centennial Exhibition at Philadelphia. Without doubt many thousands, if not millions, of visitors coming from every city and town in every state and territory, will indulge next year in a great national gala day, and people who no other attraction would ever draw from their far-off homes, will visit this great exhibition. This influx of visitors will probably double the population, not only of Philadelphia, but in all the neighboring towns and cities during the summer and fall months, and it is therefore reasonable to believe that all products of the soil in the way of fruits or vegetables will be in active demand, and bring consequently paying prices. If these predictions are correct, and there is certainly good reason to suppose them to be so, every effort should be made to increase rather than to lessen the area cultivated, as some no doubt, from the unfortunate experience of the past season, may have determined on doing.

Barn-Yard Grass.

It often happens that plants regarded not only as useless, but even as troublesome weeds in one part of the country, are valued in another portion. An experienced farmer in New Jersey, sent us for determination, a "marsh grass" which he proposed to use as winter feed for his stock instead of "upland grass." The plant was not a grass, but a bulrush, (*Scirpus pungens*), generally regarded as worthless. As we had not known of the use of this as cattle food, we requested our correspondent to give us the results of his experience with it, and we hope to learn more of it. A striking instance, or rather two instances, in which a plant usually ranked as a weed, is considered valuable, occurred to us in a recent visit to a western state, and by a remarkable coincidence three gentlemen, one from Central Illinois, and two others, brothers from Tennessee, all wished to learn the name of a grass which they in widely separated localities had found to be of value. We heard from them high praise of the grass, and when the specimens were produced, both proved to be the same—*Panicum Crus-galli*, a grass familiar to all eastern farmers as "Barn-yard grass," and by them regarded as a weed, the presence of which is an index of careless cultivation. This species is an annual, and is remarkable for its wide distribution; it is found in Europe and Asia, and in America is met with all across the continent, often in places where it is difficult to believe it was introduced, and under different aspects presenting such a variety of forms that it is not to be wondered at if botanists have called it by many names, as sometimes it departs widely from the type. But few grasses are more affected by the character of the soil, and it is not unusual to find specimens in a highly manured spot, or in the rich bottom lands of some western and south-western rivers, reaching four or more feet in hight, with correspondingly ample foliage and flower clusters, while on poor soils it is so reduced in size and luxuriance as to appear like quite a different thing. The engraving on the next page shows the extremes to which this reduction may be carried. The larger cluster, at the left hand, shows in natural size the upper portion of a plant as it appears in common soils, a foot or so of the lower part being omitted. By the side of this is placed an engraving (*B*) of a *whole plant* of the full size, as it occurs on the *Mauvaises Terres*, or "Bad lands" of Nebraska. Though but an inch or two high, these starved forms have all the characters of and are unmistakably *Panicum Crus-galli*. The grass not only presents great variety in its stems and foliage, the sheaths of the leaves being sometimes very rough with coarse hairs, but in the density of its panicle or flower-cluster, and especially in the awns or bristles which accompany the flowers; in some cases these are nearly wanting, and again are two inches or more long, and by their length and abundance give the plant a very striking aspect. Our object in calling attention to the Barn-yard grass is to get evidence in regard to the extent to which it has been used as a forage plant, and the value placed upon it by the farmers who have tried it. In the cases above referred to, the Illinois gentleman has a farm of 5,000 acres, and puts up for winter feed all he can get of this grass, and he is sure that he finds it profitable. The Tennessee gentlemen, also large cultivators, assure us that the Barn-yard grass will furnish on a given area of soil, more valuable forage "than any other plant

whatever." This is strong language, and the positiveness of these gentlemen makes us wish for more evidence. It is in such cases as these that we see the great need of Experiment Stations in this country. Half a dozen cattle fed in the ordinary way, and the same number fed solely upon Barn-yard grass, for their fodder at least, would, with frequent weighing, give positive results. It is only by actual tests that the real feeding value of cattle foods of different kinds can be estimated, and few private farmers have the time, if they have the ability, to conduct such experiments. We need Experiment Stations, and we need experimenters as well.

BARN-YARD GRASS.—(*Panicum Crus-galli.*)

BROOM SEDGE.—(*Andropogon Virginicus.*)

Broom Sedge—(*Andropogon Virginicus*).

"Broom Sedge," which is not a "sedge," but a grass, is to many southern farmers and planters a great bugbear. As soon as a field is thrown out of cultivation it is overrun with this plant, which spreads rapidly and encroaches upon cultivated land if carelessly permitted to do so. We have had numerous enquiries from readers in the southern states as to the best methods of getting rid of this weed, and occasionally we have specimens of different grasses sent to us as "broom sedge," showing that in some localities this name is given to other plants than the one to which it properly belongs, and adding another to the many instances which show the confusion that exists among common names of plants. Though sometimes called "broom *grass*," it is generally known as "broom sedge," its proper botanical name being *Andropogon Virginicus*. The genus, *Andropogon*, is a large one, there being several hundred species, a dozen or more of which are found within our own territory. They are perennials, with erect, branching, and mostly rigid stems and coarse foliage; the flowers are crowded in axillary or terminal spikes, and are of two kinds: staminate or neutral, and fertile; these flowers, (or spikelets), are placed on the stem of the spike, or cluster, in pairs of one sterile and one fertile one. The fertile flower terminated by a long bristle or awn, has stamens and a pistil, and is placed directly upon the stem of the spike; the sterile flower, which may contain stamens only, or be empty, and a mere rudiment of a flower is lifted above the other upon a little stalk of its own. The central stem of the spike, and the little stalk of the sterile flower are covered with long silky hairs; the sterile or male flower is often hairy also, a circumstance which gave the name to the genus, *Andropogon*, being from the Greek words for *man* and *beard*. These are the chief characters of the genus; the species differ in points not readily given in a popular description, as the plants are considered as difficult even by botanists. The "broom sedge," (*A. Virginicus*), is found from southern New England southward, being most abundant in the warmer parts of the country; it grows in clumps, the usually erect stems being two to three feet high, and with the leaves, are at flowering time of a purplish-brown color. The flower spikes, sometimes nearly concealed beneath sheaths, and often upon slender stems, are about an inch long, in pairs, and so clothed with very soft, dull-white hairs, as to conceal the flowers; in this species the sterile flower is quite absent, there being not even a rudiment of it, though the stalks upon which it should stand is there. This plant is a variable one, and presents so much difference in size and in the disposition of the flowers, the sheaths, leaves, etc., that it has been given several different names. There are two or three related species, that have much the same general appearance, which are no doubt included under the same common name, and so far as the farmer and planter are concerned, may be regarded as the same, but the "broom sedge" of the Carolinas, Georgia, and Florida, is the one here given. The engraving gives the upper portion and the base of the stem, of the natural size; the leaves, which are mostly erect, are here curved, to bring them within limits. By means of the hairs attached to the flower and its stems, the seed is readily distributed, and the plant soon takes possession of idle ground. Intelligent farmers regard the plant as useful rather than as an evil, and say that its presence indicates that the land is of good quality.

When burned in winter it grows up from the root and furnishes a good and very acceptable pasture for horses and cattle early in the spring. It is a trouble only to poor farmers, good ones regard it as a valuable green crop for plowing under, and easily get rid of it when they wish by turning the sod. The stems answer as a substitute for ordinary straw for various uses, and southern nurserymen prefer it to that for packing trees in bundles. Broom Sedge never establishes itself as a weed in cultivated fields, except when permitted to do so by the most careless cultivation, in which cases the farmers and not the weed are to be blamed.

German or Parlor Ivy.

The true Ivy (*Hedera*) is one of the most valuable plants for in-door decoration, but it grows too slowly, especially when young, to meet the wishes of the impatient cultivator. We know of nothing which is more tractable, or more satisfactory, if time be given it, than the true Ivy. It will grow where there is but little light, and may be trained over doors, windows, picture-frames, and in various other ways that have been pointed out in former volumes. If one only has a few plants to start with, time and care will do the rest. For those who wish to produce an immediate effect, or wish some green vine to make the room cheerful, while the slower growing Ivy is making its growth, the plant known as the German Ivy is just the thing; indeed many are contented with this as the sole climber for their window-gardens. We have not been able to trace the introduction of the plant now so generally known as German or Parlor Ivy; it was scarcely known twenty years ago, and now it is one of the most popular of plants, being not only used to run over window frames, but as a trailer in hanging baskets and in vases, and is often seen covering an out-door screen, a use to which its rapid growth in summer especially adapts it. Though called "German Ivy," it is neither "German," nor an "Ivy." Its native place is the Cape of Good Hope, and its botanical place is in the Compositæ, where the Sunflowers, Asters, Golden Rods, and a vast number of other well-known plants belong. Its botanical name is *Senecio scandens*, (and it has been called *S. mikanoides*,) which would be rendered as "Climbing Groundsel." The plant, so popular in this country, seems to be very little known in England. The standard English works on horticulture do not mention it, and the only reference that we find in a pretty full collection of such works, is in one called "Domestic Floriculture," in which a large share of the illustrations are taken from the *American Agriculturist*, as well as many of its teachings. This work says: "This is a quick-growing window-plant, not often met with in this country," although common enough in the United States. The name German Ivy being eminently inappropriate, we prefer for the common name of the plant Parlor Ivy, as half of the name, at least, is descriptive, it being eminently a "parlor" plant, but will grow just as well in any other room—even the kitchen. Its leaves bear some resemblance to those of the Ivy, but are much more delicate in texture, and more toothed on the margins. In ordinary cultivation it does not flower, a fact not to be regretted, as it bears clusters of rather common-looking, dull-yellow flowers. Indeed the only instance we have known of its blooming was in 1865, and in February of that year we gave the only engraving of its flowers that we have seen published. Planted out-of-doors, it makes a wonderfully vigorous growth, and will quickly cover a screen or trellis, but it is chiefly valued for in-door use. It possesses every quality that makes it a valuable window-plant. It grows rapidly, has ample foliage of a pleasing green, is not liable to the attacks of insects; it may be kept as small as may be desired by pinching, or it may be made to run all around a window, or, if wished, will cover a screen to curtain it, or it need not climb at all, but simply trail from the edges of a suspended basket, or pot, or from a vase. Not the least of its merits is the ease with which it may be propagated, and it is a capital plant for the novice to use in making his or her first attempts to multiply plants by cuttings; every joint placed in sand or in soil, will take root, and form a new plant, and if one has a single plant to begin with, the number can be multiplied indefinitely. It is to be obtained of every florist, and is sold at a very moderate price. The plant responds readily to good care, but it will stand a great deal of neglect—though we do not recommend it, or any other plant, on this account; the chief precaution to be taken is not to allow it to freeze; being so very succulent, it will not stand frost. Our remarks thus far apply to the ordinary form of the plant. It was the good fortune of Mr. J. Humphrey, a florist at Elmira, N. Y., to originate a variety of the German Ivy with distinctly marked foliage; instead of being of the usual pleasing green, it is variegated in a striking manner with yellowish-white, all the leaves having more or less green in them, as shown in the engraving. This novelty is now in the hands of Mr. Peter Henderson, who is making a careful trial of it, before offering it to the public. In a note accompanying the specimen, from which the engraving was made, Mr. Henderson says, "if it will only grow as freely, and show the same vigor of the plain-leaved, it will be a most beautiful plant." We quite agree with Mr. H. in his view of the value of the variegated German Ivy, and appreciate the moderation with which

VARIEGATED GERMAN IVY.

CHEROKEE ROSE.—(*See next page.*)

he speaks of it, before he has given it a fair trial. We hope, for the sake of all lovers of fine house-plants, that this may show sufficient promise to warrant Mr. H. in offering it for sale.

The Cherokee Rose.

In the southermost states a rose has long been known as the "Cherokee Rose," and is now largely used for hedges. Under the impression that it was a native species, it was described by Michaux as *Rosa lævigata*, and the native origin of the plant has been advocated by various writers. After the death of Elliott, the eminent botanist of South Carolina, some of the manuscripts left by him were published in the *Southern Agriculturist*, Charleston, 1831. One of these was an article upon the culture of the "Cherokee, or Nondescript Rose, as a Hedging Plant," in which he says: "The history of this plant is obscure. It was cultivated before the Revolution, by the late Nathan Hall, Esq., at his plantation near the Savannah River," giving it as his opinion that it was brought down from the mountains, by some Indian traders, and stating that Kin found it on, or near, the Cumberland Mountains, in Tennessee. In early times the foreign trade of Charleston was extensive, and there is now no doubt among those who have investigated the matter, that it is an Asiatic species, which, in the congenial climate in Georgia, South Carolina, and the neighboring states, has made itself quite at home, and while it has all the appearance of a native, it is really an old species, long ago described as *Rosa Sinica*. The Cherokee Rose, a name which will hold, whatever botanical title may be given it, is an evergreen, with very long, almost vine-like stems, and dark-green, beautifully glossy leaves; its long shoots are furnished with strong, hooked prickles, and these harden with the wood, and make the plant a very formidable one. The flowers appear, in the southern states, in very early spring, and are produced in the greatest profusion. Where the plant has grown at will, and festooned itself upon neighboring trees, its shoots, literally covered with flowers, hang down for 20 to 40 feet. The flowers are single, and of a very pure white, contrasting beautifully with the dark-green of the foliage. Our object in calling attention to this plant, is two-fold. First, as a hedge plant. Those who have written upon hedge plants for the southern states, prominent among whom was the late Thomas Affleck, of Texas, place the Cherokee Rose in the very front rank, for beauty, strength, and permanence. In some of the southern states there are hedges at least 50 years old, in full vigor. It is very likely, judging from the fact that the Cherokee Rose has not been injured by several exceptionally cold winters in the southernmost states, that it would succeed as far north as Maryland and Virginia. It is readily propagated by cuttings, about 6 inches long, made in the fall. Mr. Affleck's plan was to have small trenches spaded *across* the hedge-row, at distances of three feet apart; these trenches were 15 inches long, and in each were set three cuttings; soon after the first cultivation of the corn, he worked the hedge-row, eradicating all weeds, and pulling up all the plants in the cross-rows, but one. The next winter the plants are to be cut back to within a foot of the ground, and after that allowed to run at will, laying in the shoots as they grow in the line of the hedge. When the hedge has reached a sufficient hight and width, it is kept within bounds by an annual winter pruning. A second reason for noticing the Cherokee rose, is to call attention to it as a winter-blooming greenhouse plant in the northern states. Our people who have conservatories and greenhouses, get plants from the ends of the earth, and neglect those which grow, so to speak, close at home. A few amateurs around Boston have learned the value of the Cherokee rose, and grow it to their great satisfaction. It was first introduced there, as we are informed, by the late Col. Perkins, (whose first greenhouses were built in 1806), over 50 years ago; the original plant is still vigorous and prolific, and from this was propagated the plant which furnishes us the material for an engraving; this plant is now some 20 years old, and covers about 100 square feet of a lean-to house, being planted out in a confined border; it has not succeeded in pot culture, as its roots require abundant room. It receives a severe pruning in September, and has plenty of liquid manure while it is growing and blooming, which is from the first of December until the middle of May. From 200 to 300 flowers are cut daily from this plant; though single, the buds and flowers are much admired, and especially suited to florists work. This rose is eminently worthy the attention of florists, and it is not the least of its recommendations, that it is generally free from the attacks of those insects which so infest other greenhouse roses.

Notes from the Pines.

EDITORIAL CORRESPONDENCE.

When Col. Waring sent his last "Ogden Farm Paper" from some obscure corner in Germany, I little thought that my next "notes" would be from among "the Pines" of a not at all obscure portion of Georgia. Suffice it to say that these notes come from within two miles of the Savannah river, and so far as "Pines" go, if I do not write from "The," I do write in full view of some, and, indeed, many "Pines." From this charming country retreat, where there is on one hand a view of the distant city, on the other, the high lands of South Carolina, and still farther to the left, the "sand-hills" of this portion of Georgia, there are to be seen pines which leave those which have given to my place its name quite in the shade. The leading species of these

Southern Pines

are first, and most abundant, the "Old-field," or "Loblolly-Pine" (*Pinus Tæda*), which is found everywhere, from a few inches to 50 and 100, and sometimes even 150 feet high. It is called "Old-field" from the fact that it is one of the first things to spring up on land that is thrown out of cultivation, and in a surprisingly short time covers the ground with a young forest. The wood, though of second quality, is found useful for many purposes, but it is much less resinous than that of the

Long-leaved Pine,

or the "yellow pine" (*P. australis*), which is, as one writer says, "one of the great gifts of God to man." This is the wonderful source of turpentine, rosin, pitch, tar, and other products, which I need not describe; my object in mentioning it at all is to call attention to the great beauty of young specimens, 3 to 10 feet high; these have a few branches below, while the leader is clothed with leaves 12 to 15 inches long, and being of a most vivid green, are charming specimens, and worthy of being planted for ornament wherever they will stand the climate. The country people sometimes call this the "Broom-Pine;" they cut off the top of a young tree, and bind a cord around a portion of the upper leaves, stripping off the rest, leaving the bare portion of the stem for a handle, and thus make a rude, but serviceable broom. One of the very common trees all through this country is the

China-Tree or Pride of China

(*Melia Azedarach*), though it is oftener corrupted into "Chaney-tree." The rapidity of its growth, its dark-green and handsomely-cut foliage, and its pleasing, though not showy, lilac-scented flowers, make it very popular as a shade-tree in both town and country. I saw at the nursery of P. J. Berckmans, Esq., near Augusta, a very striking variety of this tree, all the branches of which are erect, and reach about the same hight, forming an umbrella of foliage as perfect in form, as if it had been trained into shape, and warranting the name, *umbraculiformis*, or umbrella-shaped, which Mr. B. has bestowed upon this variety. Among other striking trees to be seen at Mr. Berckmans' extensive establishment are evergreens, both conifers and broad-leaved, to which northern cultivators must be strangers, except as small specimens under glass. What do you think of

An Avenue of Magnolias,

the Great Southern Magnolia (*M. grandiflora*), a fourth of a mile long? I have seen no finer sight in tree-planting than this. This tree barely escapes death at Washington and Philadelphia, and everywhere north of these points must be housed in winter. This avenue is of seedlings, set out about 15 years ago, and the trees will now average 25 feet in hight, though some are much taller. Mr. B. attributes his remarkable success to planting for his avenue seedlings only one year old, mere pot-plants, an operation which much amused his neighbors, who believed in setting large trees, but subsequent success has abundantly justified his judgment, and our friends who wish to set out this grandest of southern trees, will do well to follow this example. One remarkable feature in this avenue is the great variety presented by the trees, which, being all from the seed of the same *species*, are unlike in size and habit, in color and expanse of foliage, and in vigor. Some make grand and perfect pyramids of the darkest foliage from the ground upwards, and so thick that a bird can hardly make its way through it; others bear only a few light-colored leaves at the ends of the branches. Two of the trees are grafted specimens of the variety *ferruginea*, remarkable for the dark rust-colored down on the underside of the leaves; but the most remarkable of all is one tree which the French would call *remontant*, as it blooms more than once during the season, often having flowers as late as October. The beauty of these Magnolias is enough to tempt one to remove to a clime where such things are possible. When I left home, in the middle of October, we had already had severe frosts, and it was sharp work to save those tender plants which needed to go

Into Winter-Quarters.

In three days I reached here, where scarcely anything but the varieties of Coleus, and other plants which, like that, succumb to cool weather, even before there is actual frost, shows that winter is at hand. Here Dahlias are still in full bloom, and tender vegetation has suffered more from dry than from cool weather. I went out this morning among the fig-trees, and found scarcely a leaf injured, while the late crop was still ripening.

Could I exchange my "Pines" for a home among these southern ones, I should probably hesitate before accepting it, though there are many things here very tempting to a lover of plants. The climate has of course its drawbacks, but a locality where one can have

Camellias as Door-yard Plants,

and many other plants that must be housed with us, growing freely in the open air, presents strong attractions. In the cemeteries are hedges of Cape Jessamine, Japanese Privet, true Laurel, (*Laurus nobilis*), Pittosporum, Laurestinus, and other broad-leaved evergreens, growing in perfect condition. The great coniferous evergreen here is the

Golden Arbor Vitæ,

which is so unsatisfactory with us, but here finds a congenial home. It is not possible to find a more perfect ornamental hedge than some I have seen of

this tree; not a decayed leaf or a vacant spot to be found, but a perfect unbroken wall of the richest golden green. A little plant of the Tea Olive, (*Osmanthus fragrans*), about two feet high, has been one of the pets of my greenhouse, for I know of no fragrance more exquisite than the flowers of this afford. Near the door of the house from which I write, is a plant 10 feet high, which has been loaded with bloom. The shrub which has pleased me most, because I have so often read of it, and never before seen it in flower, is the

Strawberry Tree.

as it is called in England, but quite different from the plant so called with us. Ours is an *Euonymus*, while this is *Arbutus Unedo*, a native of southern Europe, and naturalized in Great Britain. The specimen here is about 8 feet high, and as regular as a haystack; the clusters of Lily-of-the-Valley-like flowers are so numerous as to greatly hide the dark evergreen foliage, and the beauty of the whole is enhanced by the appearance here and there of clusters of globular, strawberry-like fruit, which ripens at flowering time, but is the result of the bloom of the preceding year. The fruit is globular, the size of a small cherry, rough on the surface with small prominences, yellow at first, but bright scarlet when ripe, and eatable, it being, though very seedy, pleasantly acid to the taste. We do not know how far north this tree will succeed, but I can heartily commend it to every lover of fine plants in the southern states....I cannot undertake to make a catalogue of all the plants that are common here, but strangers to northern gardeners ....At this season the ornamental grounds and flower gardens make a better showing in favor of the southern climate than do the

Vegetable Gardens.

which are now very barren. The only things I have seen in them are sweet potatoes, turnips, a few cabbages, and many collards. This last is seen everywhere; if there is a garden at all it is sure to contain collards. The English works and the few American writers who mention collards, speak of them as any cabbage plant that has not headed; the English say that they are cabbages taken as soon as "large enough to bunch," and cooked as greens; Fearing Burr, usually so accurate, falls into the same error. To my surprise, the work so generally full as White's "Gardening for the South," does not treat of them, while this month at least this is the only green vegetable to be seen all through the country. White simply says, "all the cabbages in hot climates, without proper care, are prone to run into coleworts or collards." Several friends here, well versed in such matters, assure me that the above is all wrong, and that the *southern collards* are as distinct a variety of the cabbage as savoy, kale, or any other, and so far from being a young cabbage plant, it is a variety so well fixed in its ways that it never will head. In proof of this they point out the plants now growing, the seed of which was sown last spring, and though the outer leaves spread as widely as in any cabbage, there is no sign of a head, and will not be. I have looked up the matter in the several seed catalogues at hand, and find that Thorburn & Co., (John St., N. Y.), are the only ones who seem to understand the matter; they offer under a distinct head, the seed of "Collards, Georgia grown" seeds, and give directions for sowing. It has not fallen to my lot to taste them, but I am assured by several good judges, that after they have been touched ("nipped" they say here) by the frost, they are superior to any other form of cabbage, not excepting the Savoy. For fear that some of your readers living near New York may think I am talking about the Kale, I will say that I am as familiar with that as I was formerly ignorant of Collards, and know that the plant is as unlike kale as the Savoy is to an Early York; the plant is to all intents and purposes a long-legged, sprawling-leaved, and rather narrow-leaved, unheading cabbage. I am so impressed with its distinct character, and have heard so much of its superior qualities, that I hope next year to make a trial of it. The seeds are sown, and the whole after-culture the same as for late cabbages.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

The Family Circular.

I have heard of a capital contrivance for regular communication between the scattered and busy members of families. Let us call it the Family Circular, and this is the way it works:

A brother in Ohio sends a letter to a sister in Central New York. She replies as she pleases to this letter, and communicates matters of general family interest, but instead of sending her letter to the brother in Ohio, sends it along with his letter to the father and brother and sister and others of the family who live on the homestead in Massachusetts. Here all who can, or who wish to do so, contribute letters, and the increasing budget is forwarded to Amherst. Increased yet more it moves on to Worcester. Weightier still with wit and wisdom, it goes thence to Boston, a big budget indeed; and one of the best things that goes by mail. Here the letter from Ohio is removed from the packet, but its loss is made up by the contributions from Boston members of the family. So in due time the Ohio brother gets his sister's reply to his letter, and all the other replies and communications. He takes out the New York sister's letter, adds a fresh one of his own, and sends all that has been communicated since that sister wrote, to her.

So now, each time around, at each station, a letter, simple or compound, is subtracted, and a fresh one added; and once a month each brother or sister hears from all the other members of the family. I suppose no one is prohibited from writing directly to any other not in turn. They can, at least, write what business or privacy they choose on postal cards.

This is the next best thing to family meetings, which are often of so difficult achievement, that they are extremely rare after the children are all married and have separate families to care for.

It is common to forward from one to another letters from members of the family who are most seldom heard from, but I had never before heard of such regular epistolary circulation throughout a family as this I have reported. I fancy that many scattered families, like the one into which I was born, will gladly hear of such an easy and delightful mode of intercommunication, and will regularly follow the example. There are ties stronger than those of blood to people who have had a birth above that of the animal, but the ties of family are strong, and should be tenderly cherished. They should not make us narrow in our sympathies, but they may warm our hearts into greater love for all humanity. An unkind brother or a selfish sister can not be a true philanthropist; and I suppose that the hoped-for reign of "peace on earth and good will among men" is helped forward far more by simple brothers and sisters who just aim with loving hearts to do their daily duty faithfully, in field, or kitchen, or shop, than by any professional philanthropists.

Reading for the Family.

This matter can hardly be safely allowed to take care of itself. Bright children will have something to read, and if good books and papers are not supplied to meet their need, they will accept of almost anything in their place. One of the best things that parents can do for their children is to cultivate in them a healthful taste for good literature. This alone is sometimes equal to a "liberal education." Many men and women, who justly take rank among the best informed and most cultivated people in society, owe more to their thorough and systematic reading than to any school or college.

I wish that newspapers had more faith in the existence of innocence and of genuine childhood. Doubtless there are plenty of pert unchildlike children, but I wish there were fewer paragraphs in the papers indicating that their horrible sayings and doings are considered laughable. What if George Washington never did burst into tears and throw himself into his father's arms, exclaiming that he could not tell a lie. That little story is not a bad one, though it may not be correct history, but the newspaper thrusts at it are positively vicious. Why must our daily and weekly newspapers scrape together so many accounts of horrible crimes? Some papers are far worse than others in their selection of items, and in the comparative prominence given to elevating or corrupting statements of news. So there should be careful judgment exercised in choosing a daily or weekly newspaper.

Interesting books are desirable for family reading on winter evenings—books that are alike interesting to old and young. There are good books that meet this demand, not "written down" to the supposed mental necessities of children, but so clearly expressed that all can easily comprehend them.

Quite young children become very much interested in good novels, when read aloud, but such mental fare is not nearly so wholesome, though it may be the best of its kind, for growing children, as are "The fairy tales of science and the long results of time," or, in other words, interesting records of science and history. Novels are more or less love stories, and these are a stimulus not the most desirable for unfolding childhood. Moreover, there is danger that when the mind has begun to feed upon novels, its tone will be so far impaired as to produce a morbid craving for reading of an exciting character. It is the safer way to cultivate in youth an interest in useful facts about the world we live in. Fiction has its place, and a useful one, but it is so easy to take, so attractive to most minds, that it is not necessary to labor to cultivate a taste for it. It is a great mistake to condemn fiction entirely. I have sometimes regretted that I was taught to hold the name "novel" in such abhorrence, that when I had an opportunity and leisure, at the age of sixteen, to read as many of Walter Scott's Waverley Novels, as I chose, I dared not touch them because they were novels.

Wedding Presents.

No doubt the splendid array of wedding presents made to wealthy brides is often tedious and tasteless enough to provoke plentiful criticism. But I think it must be a very pleasant thing to assist in giving a modest young couple a "setting out"; especially if they are going directly to housekeeping. There is almost no end of useful presents that might be contributed, for we all know how many things it takes to furnish a house and to stock a farm. It is pleasant for a married pair to earn most of these things together if they have health and a good business; but if they begin poor, and their family increases, they will find it hard enough to struggle through the early years of married life, even with many a lift from sympathizing friends. I am not pleading that expensive presents should be given to such beginners, but useful household articles not too costly for the giver's purse, nor too fine for the recipient's use. A kind of conventionality often rules in this matter. Certain things are supposed to be suitable for wedding presents, and of these the bride sometimes gets more than enough. This is all nonsense. Anything is suitable for a wedding present, which can be made of use or give pleasure by its beauty.

Winter and Spring Wheat.

Now I know what was the matter with that "best winter wheat graham flour," which I wouldn't have in the house if I could get better. My provider believes in that rule about the dictionaries—"Get the best"—and persisted in getting for me neatly-put-up sacks of graham made of "white winter wheat," until I showed him that fully two-fifths of the whole sifted out as coarse bran. I had to sift it in order to get it eaten at all, for not only the children's stomachs, but my own, revolted at such coarse fare. Then he doubtfully bought me cheaper stuff, graham-meal made of spring wheat, and that we ate with gladness of heart and without sifting. When I did sift some occasionally, the proportion of bran was much less and of finer quality than in the winter wheat graham. So I fancied that there was some cheating about the latter, until I moved into the country and procured my gra-

ham flour of a neighbor who raised his own wheat. Beautiful meal he sold me as long as he raised spring wheat, but as soon as his much-admired plump winter wheat came back from mill as graham, there was the same lumpy looking meal, with the same proportion of coarse bran, as in the discarded winter wheat graham of the groceries. I write of Minnesota grain. People come here from the east firm in the faith that winter wheat is superior to spring wheat, and amid many discouragements they manage at last to get to raising the winter wheat, and then discover that the best white flour, the patented "gilt-edged" flour which commands the highest price of any in our whole country, can not be made from their winter wheat, but is made alone from Minnesota spring wheat. "Graniola," too, much like wheaten grits, but a little nicer, can only be made from "hard spring wheat," such as is raised in this latitude. I have read nothing about the graham made from the various kinds of wheat, but my own experience satisfies me that of wheat raised here, the spring wheat is decidedly preferable.

Children's Winter Clothes.

There is such gross neglect of some of the plainest rules of common sense and health in the dressing of children, that one can hardly mention too often the necessity of dressing growing children warmly. There may be sufficient warmth about their bodies, where waists and skirts are made of numerous thicknesses, but the extremities are almost always dressed in too thin or too few garments. Remember that no woolen stocking is sufficient protection for a leg below the knee. There must be added either trousers or leggins, or warm underdrawers. For a little girl, there should be a complete under-suit of flannel, (cotton and wool, or soft all wool), composed of long-sleeved waist and long drawers (ankle fitting) buttoned together at the waist. Over this full colored flannel drawers, buttoned around the leg below the top of the stocking, are not too warm. Warm drawers are always more sensible than so much warmth in skirts, which should be as light and scant as convenient on account of weight.

Milk Shelves for the Kitchen.

In many farm-houses the kitchen is obliged to serve numerous purposes; amongst others it has to serve as the dairy, in which the milk is set, and the cream is kept, especially in the winter, when it is the warmest spot in the house. There is nothing objectionable in this, if the kitchen is kept scrupulously clean, and well ventilated. But a well-contrived cupboard, kept specially for the milk and cream, where they may be safe from dust and drafts, and yet have proper ventilation, will be a great advantage. Such a cupboard is shown in the accompanying engravings. It is made to fit into a corner, being six-sided, where it will occupy the least room, or be least in the way. It should be wide enough to hold two ten-quart pans across it, or four upon each shelf. This will be nearly or quite 3 feet outside measure. It is unnecessary to make it any larger, as this will be ample for winter use, where ten cows are kept. Fig. 1 shows the closet finished and closed. Fig. 2 shows a section, or the closet as though it were cut in two down the center. A post is placed in the center, which holds the racks or shelves. This is square. The shelves are held up by cross-pieces, which are let into the sides of the post, and are firmly fastened and braced as shown in the engraving. They are six inches apart, which is large enough to hold a ten-quart shallow pan. Each shelf holds four pans. To post is made to turn round, so that, as one pan is put on the shelf, it is pushed on one side, and room appears for another. As the closet is made with six sides, there is no waste space. It may be made round, if desired. The whole is covered with fine wire-gauze, or fine net; mosquito netting, doubled twice, will keep out dust and flies, but wire-gauze, when it can be afforded, is much the best. The lowest shelf is kept so far from the bottom, as to give space for two or three cream-crocks. Many a handy boy, who is supplied with a few tools, can easily make this closet. If the post creaks when it is turned around, a few fine chips of soap, or a little powdered black-lead should be forced down into the socket with a piece of wire or a feather. No oil or grease should be used. The bottom of the post should be made exactly as it is drawn in the illustration at figure 2.

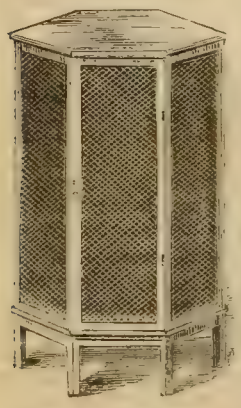


Fig. 1.—MILK-SHELVES CLOSED.

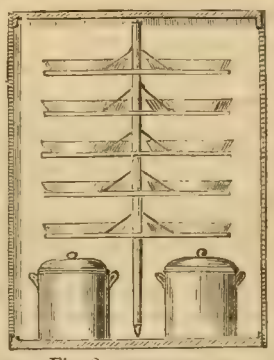


Fig. 2.—SECTION OF SHELVES.

Stationary Wash-Tubs.

One of the greatest conveniences amongst what are called "the modern improvements" in a city house, is the stationary wash-tub. It relieves the house-wife or the domestics from much heavy lifting, and lightens the labor of that very necessary but very disagreeable business, the weekly washing. Fortunately this improvement can be introduced very cheaply into any kitchen, as it stands upon his own merits, without depending for its usefulness upon any of the other improvements generally associated with it; as for instance, the kitchen boiler and a supply of hot and cold water from pipes and taps. It is convenient but not necessary to have the water flow directly into the tubs, and as few country or farm houses are provided with any water supply but the pump out of doors, this is fortunate. Any and every farm-house can be supplied with two of these tubs, whose owner can afford to spare *seven dollars*. The relieving of the hard worked wife, from the heavy and injurious lifting required, when the common tubs are used, is well worth this sum every month. In figure 1 is a sectional drawing of the tub. It is made of two-inch white pine or cedar plank. It is 21 inches wide at the bottom, 25 inches wide at the top, 31 inches long, all outside measurement, and 15 inches deep inside. The top is 31 inches from the ground, which is a proper hight for the use of a moderately tall woman. The tubs are generally made in pairs, sometimes three are made together, and are separated from each other by a partition of two-inch plank. They are covered with lids which shut down closely, and may be used for an ironing table, or for other useful purposes when it may be convenient. Fig. 2 shows the finished tubs with a wringer fastened on the partition between them. The tubs are fastened to the wall of the kitchen, in a place where there will be sufficient light. The waste water is discharged by pipes fitted into the bottom, which are closed by metal plugs secured to the side of the tubs by small chains. The pipe, for convenience, may be placed between the two tubs, from each of which short branches, as seen in figure 3, may lead to the outlet. The pipe discharges into a drain, which carries the waste to a pit or cesspool, where it may be absorbed by some material which will thus be made valuable for manure. In making these tubs, use clear and well-seasoned lumber, the joints accurately fitted together, and a coating of thick white lead and oil should be given to every joint before it is put together. Unless made in a workman-like manner, and with tight joints, these tubs will be a source of annoyance instead of comfort. We have recently seen a very valuable improvement upon these wooden tubs, in the shape of a porcelain or earthen-ware one, in the sloping front of which, inside, is made in the material of the tub, a series of corrugations, exactly like those of the common wash-board, and intended as a substitute for it. It is, in fact, a fixed wash-board. These tubs are durable, and are very cleanly.

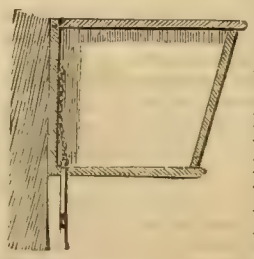


Fig. 1.—SECTION OF TUB.

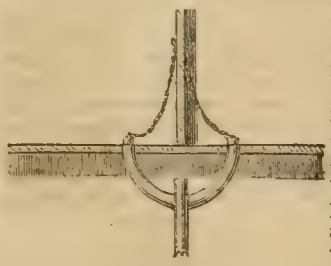


Fig. 3.—OUTLET PIPES.

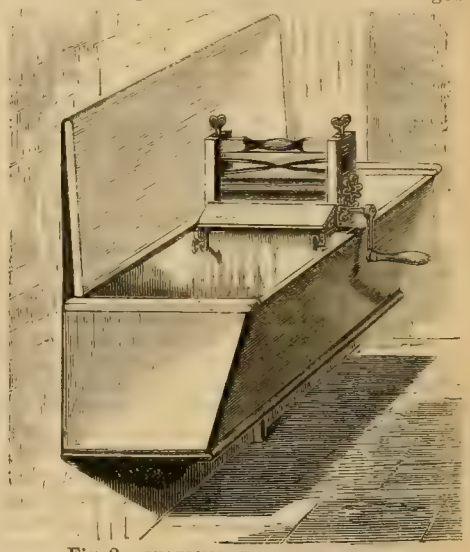


Fig. 2.—STATIONARY TUB COMPLETE.

How to Make Sour-Krout.

In some cases cabbage is a very necessary article of winter food. In mining or lumbering camps, where salt pork, beef, beans, and saleratus bread, are the principal articles of food, preserved cabbage is the best vegetable that can be used. Unlike potatoes or most other vegetables, except onions, it is not injured by freezing when properly prepared, and the acid produced by the fermentation of the cut cabbage is very healthful. Many farmers depend upon salt meat for their winter supplies, and a certain portion of acid vegetable food is a wholesome change. To keep cabbages fresh is often inconvenient, and if it is stored in a warm cellar, the smell arising from their gradual decomposition is injurious to milk or butter, and doubtless, when the cellar is below the dwelling-house, to health also. Perhaps in most cases, when cabbage is used in winter, it would be better to make it into sour-krout. This is done by splitting the cabbages, taking out the cores, slicing them into shreds,

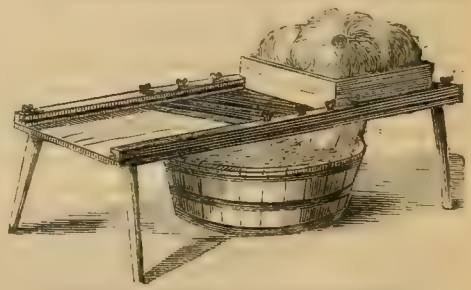


Fig. 2.—BENCH FOR CUTTING CABBAGE.

packing them with alternate layers of salt in a clean, sweet barrel, and placing a weight upon the top of the mass. In a short time the cut cabbage ferments, and parts with a quantity of water, which forms a brine and covers it, that is as long as it is kept down by the weight. To do all this by hand, or without proper appliances, is laborious and slow. There is, therefore, in use a set of tools and implements specially adapted for the business. There are the corer, fig. 1, by which the stalk is taken out quickly and without splitting the cabbage, the slicer, fig. 2, and the vat, fig. 3. The corer is something like a cheese or butter trier, sharp on the end and the edges. It is thrust into the cabbage at one side of the stalk and twisted around, and thus brings out the hard core. The slicer is a table, in which some long knives are placed diagonally about a quarter of an inch apart. A box-frame, without any bottom, is made to fit in grooves upon each side of the table, and slide up and down. This box is filled with cabbages, which are pressed down by the hands as it is slid back and forth over the knives, and the shredded cabbage falls into a basket or tub beneath the table. A heavy sprinkling of salt is then thrown on the bottom of the vat, and a layer of about six inches of the cut cabbage is placed evenly upon the salt. If desired, some caraway or coriander seeds are added. Then another layer of salt is spread over the cabbage, and thus alternately until the vat is filled. A loose head is then laid upon the cabbage, the follower shown in the engraving is laid across the head, and the screw is applied. In a few days the brine appears on the top, when the screw is turned a few times, so as to get as much as possible to the surface, after which most of the brine may be dipped off, leaving only enough to cover the krout and prevent access of air. The fermentation removes most of the strong flavor of the cabbage, and leaves it very sweet and agreeable. When the krout is taken out for use, it should be rinsed in clean water, but does not require the soaking or washing needed by that made in the ordinary manner.

Fig. 1. CORER.

Fig. 3.—VAT FOR KROUT.

BOYS & GIRLS' COLUMNS.

December.

When you know that the Latin word *decem* means ten, you will infer from what has been already said, that this was the tenth month of the Romans. This, by the Almanac, is the first month of winter, and the Almanac is more nearly right than when it calls March the first month of spring. In December we have more short days and long nights than in any other month. We here have the grand long evenings, so fine for study and for play, and we think that winter is not so bad a season after all, as it brings us many pleasures, and those are generally the pleasures of home. Then above all, this is the month in which Christmas comes, which, as the old song says, "comes but once a year."—Do you know what Christmas is, the day enjoyed by young and old, the day on which the saddest is glad, and on which the poorest heart rejoices? What Christmas is can hardly be told more briefly, and at the same time give the whole of it more in full than in the pleasant story, by a young lady, given elsewhere, called "The Night before Christmas." To New England people and their descendents, this month brings to them another anniversary which they delight to observe. On December 22d, 1620, the Pilgrims landed at Plymouth, and the Anniversary of "Forefathers' Day" is by many carefully observed. When you get older, if you have not already done so, you will read of all this, and learn how much this little band of people had to do with making our country what it now is. But Christmas overshadows this and all other anniversaries; it is kept nearly all over the world, and deservedly, as it celebrates the great event of history, and a joyous one, for from sunrise there will, on that morning, run round the world, a greeting in which we shall all join in wishing you and every one A MERRY CHRISTMAS.

Some Fine Things for Boys and Girls.

Probably our young readers do not often look at the business columns of the paper, and we would just hint to them that they may be interested in looking into the Publishers' Premium List. They will find that a great many fine and useful things are there offered in such a manner that young people can get them *free*—that is without paying out money, but only by expending a little time. If you read what is said in the premium list you will see that not only young men and women, but even small Boys and Girls can get up clubs of subscribers, and receive a premium for doing so. Many thousands of persons have become subscribers to the *American Agriculturist*, through the agency of boys and girls from 8 to 15 years old. Children are usually very successful in getting subscribers, for when a child goes to an older person and respectfully *shows* him or her the paper, the older person is very apt to look at it, for there are few who do not like children, and those who would at once say "no" to a man, without looking at the paper, will examine it if presented by a boy or girl, and there are few who once fairly look at the paper, who do not want it. You should know enough about the paper yourself, to be able to show the person what is in it, and how it tells something about almost everything, and that it has articles suited to all parts of the country. If the man is not a farmer, show him that the Household and Boys and Girls' Departments are such as he wants for his family, wherever they may live.

If you interest other boys and girls in the paper, they will tell their parents of it and thus help make it known. Most young persons can gather three, five, ten, or more subscribers, and the premium list will tell you what articles you are entitled to as a reward for your trouble. Besides the premium you will gain something else of value, because you will be learning how to do business; to approach others respectfully, to show what you have to dispose of to the best advantage, and to keep proper accounts, will all be of use in after life. The present month is one of the best for getting subscribers, and the premiums will be especially useful for the Holidays. We know several whose first earnings were in getting subscribers for the *American Agriculturist*, and though now grown up, they keep on and send a list every year.

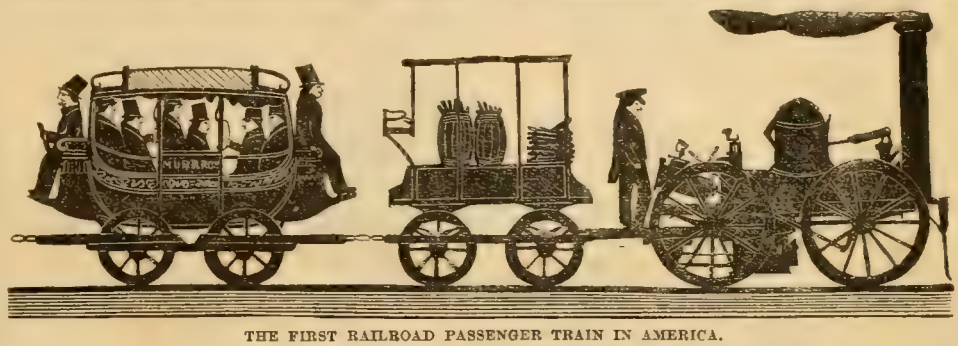
The Sphinx Rock.

Perhaps you will think this is a "puzzle picture," such as we have shown you in former months. It is, and is not. In one respect this differs very much from the others, which were mere fancies of the artist; this is not a fancy, but a real thing made by the Great Artist and Architect of all things. You are indebted for this to J. G. Fargo, of Genesee Co., N. Y., not far from whose farm this remarkable rock is situated, and he sent a very excellent photographic portrait of it. He thinks that "The Sphinx" is a very appropriate name for this rock; we do, too, and if you have read about Egypt, you will agree with him that this natural monument greatly resembles the noted artificial Sphinx, now partly buried in the sand in that country of wonders. The picture shows that the Sphinx consists of two, if not three, different kinds of rock. What an astonishing power it must have been, which wore away all the rest, and left this fragment standing alone! You can judge of the size of the rock by that of the man who stands near it. The Egyptian Sphinx, you know, has a human face, and viewed from a certain point, this rock shows one also. If you look sharply at the picture, you will see that our American Sphinx is not, if we may judge from the pictures, much behind its eastern namesake in good looks, but this was probably made ages before the Egyptian thing was thought of. That which travelers go so far to see, may after all be looked upon as only a modern imitation. Let us thank Mr. Fargo for thinking of the boys and girls.

THE SPHINX ROCK.

The First Passenger Train.

When you look at a railroad train, do you ever think what a wonderful thing it is?—Probably not if you see one often. If the stars should shine only once in ten years, what a wonder they would be, but now starlight is a matter of course. So with the railway train—could we see it only at long intervals, how we would study all its parts, and admire its mechanism, and be almost awe struck that a small quantity of water, boiled on the locomotive, could exert sufficient power as to move such a weight with such speed! But familiarity with all grand things makes us regard them as matters of course. When you look at a train upon a first class railroad of the present day, its "palace cars" like parlors on wheels, its monster locomotive, all built for strength and speed, with every bit of steel and brass shining like silver and gold its great head-light, its screeching whistle, the cab for the engineer, with all its curious contrivances, its air-break, which allows the driver to stop all the cars at once—when you look at all this, do you suppose it was so from the beginning? Do you think that when railroads were first in use that the trains were in all things like those we have at present? Not at all; like all other great inventions—such as mowers and sewing machines, the perfection in railroad-trains of the present day has gone on by gradual steps from very rude beginnings. We came across the other day a picture of the first passenger train ever run in this country, in 1831, and give you a copy of it that you may see how great have been the changes and improvements. The passenger car, you will see, is just an old fashion stage-coach put upon a truck. Even to this day the cars in England are made like three coaches together, with entrance from the sides. The tender looks much like the modern express wagon, and the wood is some of it in barrels, and some stacked up

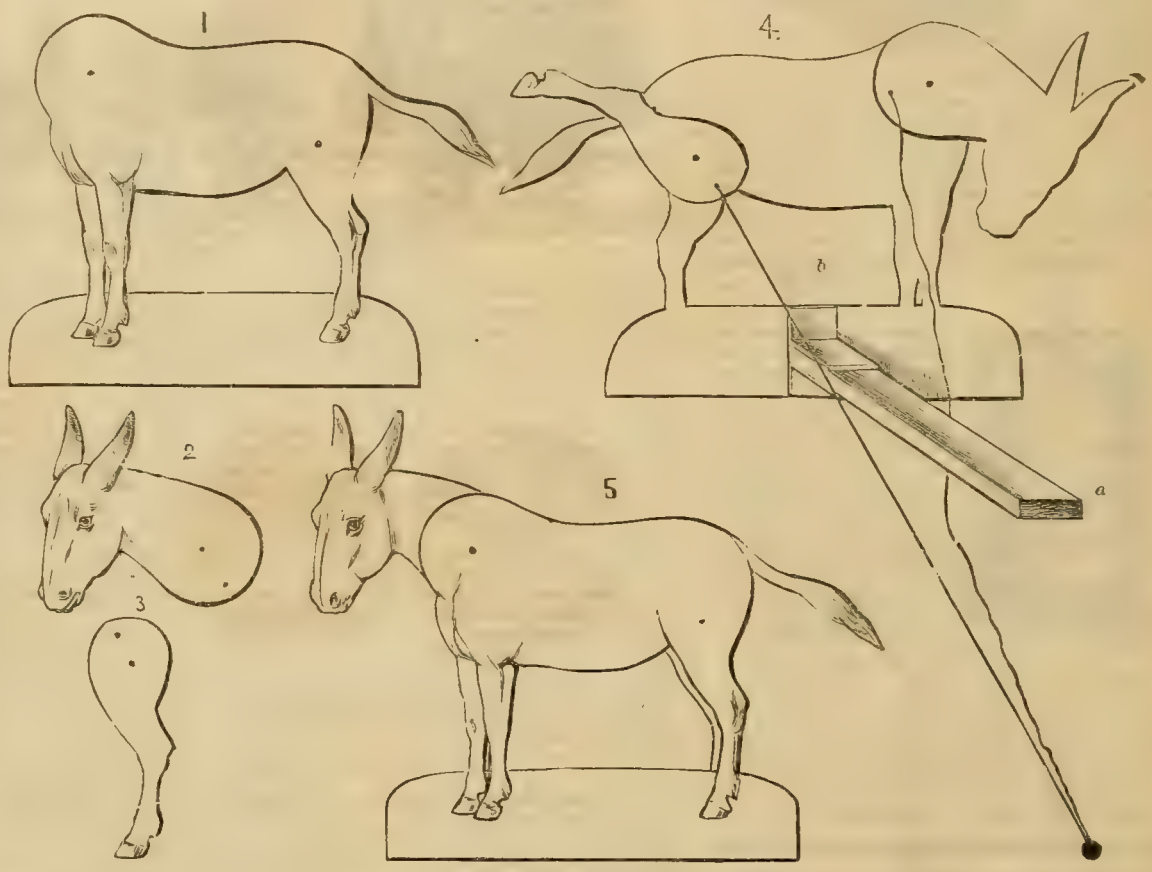


THE FIRST RAILROAD PASSENGER TRAIN IN AMERICA.

the water is, we suppose, somewhere in the bottom of the wagon. Then the locomotive, what an odd affair it seems, with the cylinder up in the air; and the unfortunate engineer exposed to the weather and the cinders—just compare this with the poorest train that is now run, and you will see that in railroad matters some improvement has been made within less than half a century.

The Mechanical Donkey.

Aunt Sue and others have something to say about Christmas presents which girls may make for their friends, young and old, but they have not provided for the boys. Those boys who can work with carpenter's tools, or with the nice little bracket saws, such as we figured some months ago, can make numerous useful and ornamental articles for their mothers and others, and they hardly need any suggestions, but the smaller boys would like to make something. A very amusing thing to give a younger brother or sister, is what we have called a "Mechanical Donkey," and we think we can show you so plainly how to make it, that you will need but little help from an older person. The materials needed are: a piece of thin paper; a piece of card or thin paste-board (some business or show-card, or thin paste-board box, such as are generally thrown away at the country stores); a bit of wood; a piece of string; a small weight of any kind, and some paste or gum. In the first place take your thin paper, (common note paper will do, or any other kind that will show the marks through it), and lay it upon the diagram, and with a pencil copy the outlines of figure 1. These lines will show through most kinds of writing paper, and, if the first you try is not thin enough, you can hunt up some piece that will let you see the lines; copying in this way is called "tracing," and in tracing you must be careful that the paper does not slip, else your drawing will be all wrong, and you must begin over again. Hold the paper in place with the fingers of one hand, while you use the pencil with the other. After you have traced figure 1, go on and do the same with figures 2 and 3, observing to put the dots for holes just as they are in the diagram. Now with paste or gum, fasten these tracings upon your stiff paper or card, and let them dry. It will be better to put a weight, such as a heavy book, upon them, so that they will dry flat. When dry, cut out the pieces, following the lines exactly; you may find it better to use a knife than scissors, at least for the place under the belly, using a smooth piece of board to cut upon. Having cut out the parts, they are to have holes made with a small awl or a large needle, just where the dots are. The head and legs are then to be put on as in figure 4, which shows the rear side; the head is fastened to the body by its upper, and the leg by its lower hole; use a coarse thread, or very fine cord, making a knot at one end, then, when through the holes, secure by a large knot on the other side, tied close up to the piece. To make the animal stand, fasten on a flat stick, as in *a*, figure 4. You can put in a couple of tacks from the other side, or gum on two pieces of bent card, as shown at *b*, in the figure, putting the stick between them, and winding a thread around the card and stick, or by gumming them to the stick. Place this stick upon the edge of a shelf or table, and then put a book or something heavy on the end of it, the donkey will stand. To set him in motion, you will need a piece of coarse thread from half a yard to a yard long, make a knot in one end, pass the other end through the hole in the neck, and through the hole in the leg, and make a knot there so that it will not slip out, as seen in figure 4. Now if you pull the string, and all works right, up will go the head and the leg, and when you slacken it down they will go by their own weight; if the parts work well, you then can apply the "motive power," which is a small weight fastened to the string, as shown in figure 4. Pull this to one side and let it swing, just like the pendulum to a clock, and first the head will rise and then the leg, these parts going up and down in the most amusing manner. The size of the weight will depend upon the thickness of the card, and the ease with which the parts move, and you will have to make several trials; if the string is short the motion will be quicker, and if longer, slower. If your card is white, you can make the eyes, nostrils, the shading around the head, ears, legs, and elsewhere, with a pencil, as shown in figure 5, but if you have colors and know how to use them, you can paint the animal of the proper color. If it does not work at first, have patience, and try to find out where the trouble is, and remove the cause; if properly made it will work, for we always try such things before giving them to you. If you can draw, you can make other animals in the same manner, such as a bird moving its head and tail.



THE MECHANICAL DONKEY.

Impudence Rebuked.

A party of collegians on board a steamboat were amused at the staid and somewhat quaint appearance of an old member of the Society of Friends, whom they forthwith began to criticise with more freedom than good taste. At last one of the most forward of the party volunteered to "draw out" the Quaker for the amusement of his friends, and, amidst their suppressed laughter, struck up a conversation with him, which was speedily turned to religious matters. "I don't believe much in the Bible," said the collegian. "Does thee believe in France?" asked the Quaker. "Yes, I do. I never saw it, but I have plenty of proof that there is such a country." "Then thee does not believe anything unless thee or thy reliable friends have seen it?" "No; be sure I don't." "Did thee ever see thy own brains?" "No." "Does thee believe thee has any brains?" Amidst the titters of his companions the graceless student turned on his heels and walked off, a sadder if not a wiser man. *

Aunt Sue's Puzzle-Box.

ANAGRAMS OF SHAKESPEARE'S CHARACTERS.

1. Count Ostch.
2. Priory Cook.
3. In Cabal.
4. Mr. I. Dana.
5. Poet Clara.
6. Lady Clare Nowis.
7. Hett's hog.
8. Mad Cate Bhly.
9. Karl Inge.
10. Roger Dyb. ELLEN M.

NUMERICAL ENIGMAS.

1. I am composed of 15 letters:
   My 11, 14, 2, 8, 5, 3, 10, is a daring fellow.
   My 15, 9, 4, 7, 1, is holy.
   My 15, 12, 6, 13, is to adapt.
   My whole is a lovely flower. MARY C. GRAVES.
2. I am composed of 14 letters:
   My 6, 3, 10, 9, 14, is a girl's name.
   My 1, 2, 5, is a dwelling.
   My 4, 11, 13, 14, is a fish.
   My 7, 6, 12, is generally pleasant to take.
   My 9, 8, is a pronoun.
   My whole is a city of Europe. ELLA G.

DOUBLE ACROSTIC.

The initials and finals form the names of two musical instruments.

1. A young animal. 2. Horizontal. 3. An animal. 4. A city in Pennsylvania. 5. Dishonorable. 6. A lake in New York. 7. A man's name. 8. An animal. 9. A dweller. HERBERT J. K.

DECAPITATIONS.

1. Behead a woman, and at once
   A man is left in place.
2. Behead a portion and you have
   Science or subtle grace.
3. Behead "to gratify," and then
   A sort of contract's left.
4. Behead a solitary one, and lo!
   You leave one as bereft. STAR STATE.

CONCEALED BIRDS.

1. Oh! ma, can't you take Mac away, he teazes me. 2. We went as far as Montauk Point. 3. The mules went with us all the way. 4. We were nearly turned over at the top of the hill. 5. Hurry, Nell, or you will be left. 6. Will you lend me a dollar, Kate, for a day or two? 7. Although at first jet black, it eventually turns white. 8. The deep snow renders the roads impassable. MATTY.

SQUARE WORD.

1. A mistake. 2. Spacious. 3. Clothed. 4. A Greek letter. 5. A mount in England. SALLIE.

CHARADE.

My first, of a house is two-thirds,
My second part of (or a) wheel,
My third (in sound) not far away,
My fourth is not far from the heel,
My whole is a disguise, unknown
Like riddle, till the answer's shown. QUIZ.

PUZZLE.

Take the last two letters of a certain lake and the first two letters of a town, and transpose the letters into a sea. CAPT. JOHN W. W.

TRANSPOSITIONS.

(Fill the blanks with the same words transposed.)

1. I heard the animal —— under the ——.
2. The —— had to go through three ——.
3. Which fruit do you prefer, —— or ——?
4. I saw the —— —— away under a bush.
5. The name of the —— was ——, he used to —— about a good deal.
6. You should buy things at —— with great ——. C. M. E.

POSITIVES AND COMPARATIVES.

(Example: Let, letter.)

1. To grasp,—a Roman.
2. Ended,—a shepherd.
3. A stick,—to roam.
4. An emblem,—an animal.
5. A body of water, — a prophet.
6. An organ,—anger.
7. A number, — a tradesman. BESSIE.

ANSWERS TO PUZZLES IN THE OCTOBER NUMBER.

POSITIVES AND COMPARATIVES.—1. Horse, hawser. 2. Side, cider. 3. Clove, clover. 4. Pshaw, shore. 5. Home, Homer. 6. Oh! oar. 7. Corn, corner. 8. Fie, fire.

NUMERICAL ENIGMAS.—1. A rolling stone gathers no moss. 2. "Brother the sun is going down."

DOUBLE ACROSTIC.—D— ori —C Defoe's Crusoe.
E—ndeavo—R
F—lambea—U
O— ti —S
E— mbly —O
S— pok —E

NAMES OF RIVERS ENIGMATICALLY EXPRESSED.—1. Catawba. 2. Leaf. 3. Black Warrior. 4. Savannah. 5. James. 6. Cowpasture. 7. Pamunkey.

DIAMOND PUZZLE.—

A
P U T
P A N I C
A U N T S U E
I S S U E
C U E
E

CHARACTERISTIC INITIALS.—1. John G. Whittier. 2. William Cullen Bryant. 3. Schuyler Colfax. 4. Michael Angelo. 5. Daniel O'Connel. 6. Bayard Taylor. 7. Abraham Lincoln. 8. T. S. Arthur. 9. Grace Greenwood. 10. E. D. E. N. Southworth.

CROSS WORD.—Cheerfulness.

PI.—One of the most important rules of the science of manners, is an almost absolute silence in regard to yourself.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Aunt Sue's Chats.

ELLEN F. G.—A very "cheap, simple, and pretty design for a statuette-stand for mantel-piece" may be

Fig. 1.

Fig. 2.

made with a little of the cloth known as "Turkey-red," and a piece of board three-eights of an inch thick. Cut the board into three pieces: one, six inches by seven; one, ten inches by eight, and one, ten by thirteen. Round off the corners of one end of the latter, like fig. 1. Fasten on to this some "turkey-red," in three box-plaits, like fig. 2, by small tacks on the back, driven in to the head. Then fasten a plain piece of turkey-red on the back (cover the tacks) by turning down the edge of the cloth a little distance from the edge of the wood, and basting it round with a needle and thread.

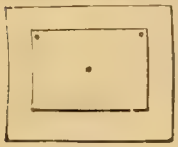


Fig. 3.

Cover the two square pieces with cloth. Place the smaller on the larger, and fasten them together with three small tacks—one in the center, and one at each back corner, as in fig. 3. This makes the base. Place the largest piece (with the box-plaits) behind the base, and fasten them together by tacks; although they may be left separate, if you prefer it, as the wall will support the back; and the thing is complete, and makes a very effective stand for a statuette. Of course you can use any other color or material to cover the wood that may best harmonize with the color of your furniture.

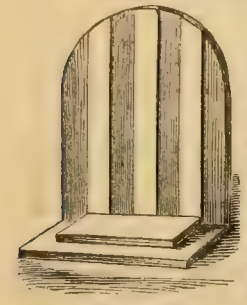


Fig. 4.

Fig. 5.

EFFIE.—If you "can sew," you can make "Uncle Edward" a very acceptable "Christmas present" in the shape of a vest pin-cushion. I think one in the shape of fig. 5 the most serviceable, as it fits the vest-pocket comfortably, and long pins may be put in one way, and short ones the other. Cut your two pieces of card exactly the same shape; cut two pieces of silk (or merino) a little larger than the cards. Take a very fine needle and thread and baste the silk all round the cards, turning the edges over, then over-hand them together. Of course your mother could tell you just how to do it, but if you read this carefully and follow the instructions, you can do it all by yourself and need not trouble her.

Fig. 6.

Then, for "the baby," you can make a worsted ball. It takes a good deal of worsted, but you can use all the scraps left from other things. Make a little one first, just

Fig. 7.

Fig. 8.

to learn how, and you can easily increase the size. About two and a half inches in diameter is the proper size. Cut two pieces of card as large as a an old-fashioned copper-penny. Place your thimble on the center of each piece, draw a pencil-mark around it, then cut it out, leaving holes in the centers of the cards, as in fig. 6. Thread your worsted-needle, or bodkin, with doubled worsted, two or three yards long, and wind it over and over the two cards, as in fig. 7, first one color, then another, until the hole is filled up, and you cannot push the needle through any more (fig. 8). Now push the point of a pen-knife into the edge *between* the cards, and commence to cut around, as in fig. 9. Be very sure that the knife is between the two cards, then cut all the way round, as in fig. 10. Tie a string tightly around the center between the cards (after winding it two or three times), then tear out the cards, and the worsted will come together. Now

Fig. 9.

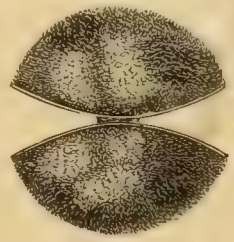


Fig. 10.

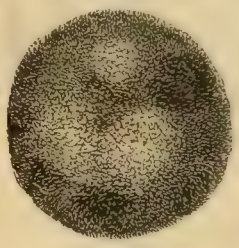


Fig. 11.

take your scissors and cut off the uneven ends, so as to have the ball smooth and velvety, and you will be delighted with the effect (fig. 11).

The Night Before Christmas.

BY "LADY-FERN."

The evening was cold, for the north wind was blowing. It had been chasing the little grey clouds all day, and now the whole sky was full of them. The sun went down, but the clouds were so thick that nobody would have known it, if the wind had not grown colder, and the sky darker.

"It feels like snow," said Madame Rubrum Maple, and she shivered from top to root.

"Let it snow, *I* say!" cried Sir Quercus A. Oak, shaking all his brown leaves in defiance, "it's time it did."

"I feel scarcely prepared for cold weather," remarked Madame timidly, "my limbs are shaky, and they have become so stiff that it is with difficulty I can bend them.

"Madame," said Sir Quercus, severely, "excuse me if I tell you the truth, I was brought up to speak it. Your limbs are not well proportioned. One of them is at least fifteen feet longer than the other, while the lower ones are almost too small to be mentioned. You need proper training, my friend. No wonder you are shaky."

"Hear him talk," whispered young Kalmia Laurel to little Miss Polypody Fern, who was reclining on a rock near by, "the less these great folks know, the more they say about it. If he were to speak the *whole* truth, he would have mentioned that he gives Madame so little room that she has to grow up high to find the light."

"But, Mr. Laurel," asked Polly, "what does Madame Maple mean by *snow?* I never heard of it before, *is it pleasant? and what is cold weather?*"

"Delightful! delightful!" cried Juniperus V. Cedar, Esq., who was standing near, "I have hardly been able to grow for the heat all summer, but this cool breeze puts new life into my veins. Why, *this* is cold weather, and as for snow, look on your left-hand frond, my dear."

Miss Polly looked, and truly there was something she had never seen before. It was very small, very soft, very white, it made no noise, and it had scarcely any weight. Where had it come from? Not from the ground, surely. Out of the sky then.

"So this is snow," she said to herself, "it seems beautiful, but it's very cold."

"Don't be afraid!" called young Kalmia cheerily, "it won't hurt, it will keep you warm. I'm only afraid there won't be enough of it."

"Enough to give Santa Claus easy riding, I hope," said J. V. Cedar, "the good man has much to do, and far to travel with his little steeds to-night."

"Bless me," cried Kalmia Laurel, "I really had forgotten that this is the night before Christmas. That accounts for the snow. Who ever heard of Christmas without snow? I must be getting old, if I'm losing my memory, but it's a *green* old age, at any rate," and Mr. Laurel shook himself in laughing at his own joke.

"But, Mr. Laurel," whispered Miss Polypody in surprise, "who is this good Santa Claus with his steeds, and what do you mean by the night before Christmas?"

"Why, don't you know? but then these Ferns are always too stylish to know what everyone else knows," said Mitchella Partridge-berry, nodding her little red head in scorn.

At this sharp answer Miss Polypody wished she could crawl into the cleft of the rock beside her, but all she could get in was her roots, so she was forced to stand, covered with confusion.

"Come, come," cried the kindhearted Kalmia Laurel, "you know Polly was only born last spring, she'll know as much as you in another year, Miss Mitchella. Listen, my dear, I'll tell you what you want to know. Some people, like Madame Rubrum Maple, don't like cold weather and snow. Almost all of your very genteel family have gone to sleep under the leaves, but you, my dear, and I, keep awake all winter, to see what's going on. Polly, did you ever see a man, a queer creature, with four branches, and a great many small roots on the top of his head? He moves very quickly, and don't care who he steps on."

"I saw a creature with the fine roots you speak of once, but it moved more slowly, and though it did not tread on us, it pulled up many of my cousins and took them away."

"Ho! ho!" laughed young Laurel, shaking himself again, "it was a *woman*; not much difference, except in their leaves—clothes—I mean. Well, these creatures have some queer ways. On this night every year Santa Claus comes for some of us to adorn the festival they celebrate on the morrow. He is a man, too—and the best of the lot. At this time of the year he visits everyone he can, and those he is forced to neglect feel very much hurt. It is not himself they care for so much, you understand, but the gifts he brings to everyone, especially the children."

"But what is it all about, and why does he do this at the same time every year?" asked Miss Polly, who always liked to get at the bottom of things.

"I don't very well know myself," answered young Mountain Laurel frankly, "ask Lord Abies Hemlock."

"What is your wish, Miss Polypody?" asked Lord Hemlock, bending gracefully down to the little fern.

"May it please your Lordship," was the modest answer, "why does Santa Claus come this time every year?"

"Listen, and I will tell you. Many long years ago our Creator sent a wise and holy person to teach men how to live. This was necessary, for they did not know themselves. Now, though this person was the Son of God, and came from heaven, He resolved to become in all things, except sin, like men, in order that they might the more easily believe his words. So He was born in a stable, and his cradle was a manger, and all who came to welcome him were three strangers from the East. But these strangers brought rich and costly gifts to the Christ-child, and now, every year when His birthday comes, men give gifts to those they love, to remind them of the Child in the manger, and all the joy He brought into the world.

"As for Santa Claus, he has enough to do to carry the gifts where they belong. All love him, but especially the children, for to them he brings the most." And Lord Hemlock lifted his beautiful branches towards the sky again.

Now, while they were talking, the darkness grew deeper and deeper, and the snow fell faster and faster, till Miss Mitchella was quite hidden, and Polypody had to stretch up to look around. But about midnight, when Lord Hemlock had finished his story, and Madame Maple was sighing in her sleep, the snow ceased to fall, the north wind blew and blew till it blew all the clouds out of the sky, and there, behind them, were the stars, which had been shining all the while, though nobody knew it. Then it was that Mr. Laurel and Miss Polypody, wide-awake and waiting for something to happen, heard a sweet silvery sound far away, and looking through the edge of the wood, saw a jolly old man

POOR ROBIN RED-BREAST.—*Engraved for the American Agriculturist.*

driving a reindeer team furiously down the mountains.

"Ho! ho!" called Mr. Mountain Laurel, "wake up, all of you! here's Santa Claus steering straight for our wood!"

In less than a minute the reindeer steeds stopped under Sir Oak's broad branches, and Santa Claus jumped from his sleigh, calling in a loud, ringing voice:

"Come, friends, come; who's ready to give me Christmas greens for the children?"

At this a great shaking and rustling took place among the trees and shrubs; all had saved their best branches for Santa Claus. Polly saw with amazement her friend Kalmia give up his finest leaves without a murmur, as the little man went from place to place, breaking off Lord Hemlock's handsome branches, and Lady Arbor Vitæ's bunches, taking some of Juniperus Cedar's twigs and Baron Pine's tufts. All these he threw into his sleigh, already stuffed with boxes and bundles, and with a merry "Good night" was off again.

Miss Polypody was so full of excitement that sleep was out of the question, so she watched and waited through all the still night. And it chanced, for want of something better to do, she fell to gazing at the eastern sky, as thick with little stars as the air had been with snowflakes. Now, a little while before the dawn, in the deep blue space above the hills, a beautiful star arose, and shed its mild radiance across the fields of snow.

"It is the Star in the East!" cried Lord Hemlock, and then the best thing of all happened. Now, if you had been there, you would have heard nothing but the wind sighing in the pines, and among the bare branches; but Polypody heard something very different, and yet the same. For all the trees and plants, and the brown grass of the meadows were singing the most beautiful music, sweet, and clear, and low, and this is what they sang:

"CHRIST IS BORN, CHRIST IS BORN, ON CHRISTMAS DAY IN THE MORNING!"

Poor Robin Red-breast.

"What a sad picture!" will be the remark of many a little one who looks at the above. We often give you pictures that are funny, but even children know that there are many things in the world that are not at all funny, and that boys and girls do not always laugh. So our pictures cannot always be the kind to laugh over, but when we do give a sad one, it is always for a good reason. In this case we give you the picture because it is a very good one—one of the best of an English artist, who is famous for his drawings of animals of all kinds. Some sharp-eyed boy may say, "That isn't a very good picture of a robin," but he must remember that our robin, and the bird called by the same name in England, are two different birds; ours is nearly twice as large as theirs, and they are unlike in other respects, but they are related, and both agree in being very domestic birds. You may think it is easy enough to draw a dead bird, but it is rarely that you see a picture that tells its story so plainly as this one does. You see at once that poor Robin died of cold and starvation. Snow everywhere, and not any thing to be found to eat—a sad case indeed. Another reason for showing you this picture, is to remind you that what is represented in it happens over and over with us every winter. Most of the birds of the northern states go away hundreds and hundreds of miles each winter to find the warmer climate of the southern part of the country, where food is abundant, and there is rarely any snow to cover it. But some birds stay all winter, and others come from farther north, and there are but few places in the country where there are not several kinds of birds. Even some robins stay at the north all winter, but they are not apt to show themselves. Did you ever think how dull it would be were there no birds at all during the winter; and how much more cheerful they make it by flying about with their pleasing ways and merry chirpings? How tame they get, and they seem to know that near the houses—at least near some houses—is their safest place, and that there they will find food. So in the winter remember the birds, especially when the ground is covered with snow. After a heavy snow storm, all the berries and little seeds are quite hidden, and if the snow stays long the birds must die, unless they can find something to eat upon the top of the snow. At these times the birds gather around the houses and barns, and made tame by cold and hunger, they are no longer shy and wild, but will allow you to come very close to them. It must be a very thoughtless boy who would abuse this confidence, and injure the poor hungry creatures. If you wish to know how hungry they are, just throw out some food! Now let every boy and girl think of the suffering birds, and feed them regularly. Choose some place, such as the top of a low shed, or the roof of a piazza—any place out of reach of the cats, and feed the birds there; they will soon learn to come regularly, and when one or two find out the place, others will somehow learn it and come too. The food may be crumbs from the table; seeds swept up from the hay mow; corn or other grain cracked by pounding it small enough, or any such things. It will be some trouble, you may think, but if you are really fond of birds, you will get sufficiently paid for the trouble, by the pleasure of seeing them eat and of seeing how happy they seem. They will often try to sing in their way—for these winter birds are not very fine songsters—to show you how grateful they are. Then the satisfaction of knowing that you have made any living thing—even a tiny bird—happy, ought to be sufficient reward for this act of kindness to the birds. One thing more: do not forget that the birds want water as well as food. You would not like it much if you could only get some snow or bits of ice when you are thirsty. If there is not a trough where the birds can drink, contrive something that will hold water, and break the ice, so that the birds can reach the water every day.

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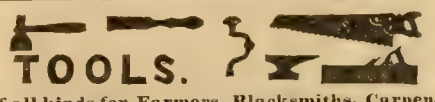

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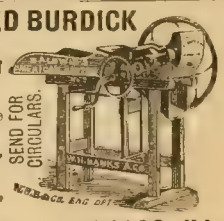

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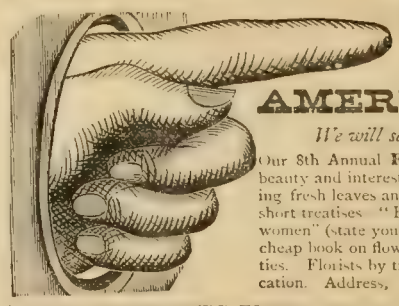

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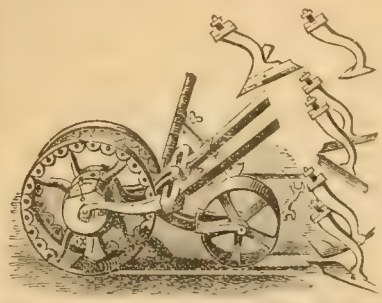

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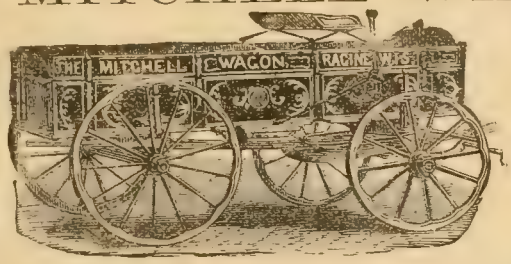

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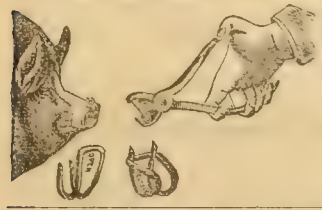

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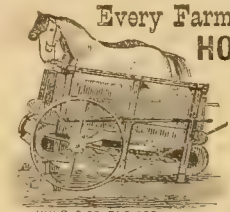

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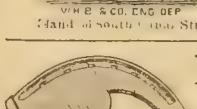

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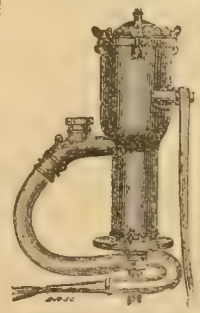

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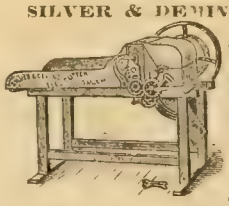

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1	Boy's Wagon (C. W. F. Dare)	$ 6 00	15	55
2	Case of Scissors (U.S. Steel Shear Co.)	$ 4 00	10	51
3	Pair of Skates (Patterson Bros.)	$ 3 50	8	30
4	Bat and Ball (E. I. Horsman)	$ 2 70	7	27
5	Improved Table Croquet (do. do.)	$ 3 00	8	20
6	Child's Carriage (C.W. F. Dare)	$20 00	30	102
7	Child's Self-operating Swing (do. do.)	$ 4 00	9	22
8	Doll's Cottage Chamber Set (do. do.)	$ 5 00	12	37
9	Crandall's Building Blocks	$ 2 00	5	20
10	Crandall's Masquerade Blocks	$ 1 00	3	....
11	Crandall's **Acrobats**	$ 1 00	3	....
12	Crandall's **Menagerie**	$ 2 00	5	20
13	Utility Adj. Table (Lambie & Sargeant)	$ 8 00	16	52
14	Pocket Tool Holder (Miller's Falls Co.)	$ 1 00	3	....
15	Bracket Saw (do. do.)	$ 1 25	4	....
16	Payson's Indelible Ink—Pen, etc	75	3	....
17	"Peoples' Pump" (W. S. Blunt)	$12 00	19	65
18	Tea Set (Lucius Hart Man'fact'g Co.)	$50 00	66	225
19	Ice Pitcher (do. do. do.)	$16 00	24	80
20	Casters (do. do. do.)	$ 9 00	17	54
21	Cake Basket (do. do. do.)	$12 00	19	65
22	Revolving Butter Cooler (do. do.)	$ 8 00	16	52
23	One Dozen Teaspoons (do. do.)	$ 6 00	15	45
24	One Dozen Tablespoons (do. do.)	$12 00	19	65
25	One Dozen Table Forks (do. do.)	$12 00	19	65
26	Child's Cup (do. do.)	$ 2 75	7	27
27	Child's Knife, Fork & Spoon (do.)	$ 5 00	12	37
28	Moore's Floral Set (Moore Man'f'g Co)	$ 1 00	3	....
29	Excelsior Pocket Microscope (Vulcanite Optical Instrument Co.)	$ 2 75	7	27
30	Abbott Pocket Microscope (L.G. Abbott)	$ 1 50	4	....
31	Four "Pocket Soap-Bubble Toy" (Bliss)	$ 1 00	3	....
32	Turn-table Apple Parer (D.H. Goodell)	$ 1 00	3	....
33	Climax Apple Corer & Slicer (do.)	$ 1 00	3	....
34	Family Cherry Stoner (do.)	$ 1 00	3	....
35	Knives and Forks (Patterson Bros.)	$14 25	21	70
36	Knives and Forks (do. do.)	$18 00	27	92
37	Carver and Fork (do. do.)	$ 4 00	10	34
38	French Cook's Knife, Fork, and Steel	$ 4 00	10	34
39	Pocket Knife (Meriden Cutlery Co.)	$ 1 50	4	....
40	Pocket Knife (do. do.)	$ 2 00	6	22
41	Pocket Knife (do. do.)	$ 2 75	7	27
42	Ladies' Pocket Knife (do. do.)	$ 2 00	6	22
43	Multum in Parvo Knife (do. do.)	$ 3 50	8	30
44	Garden Seeds & Flower Bulbs (select'n)	$ 2 00	6	22
45	Sewing Machine (Remington)	$70 00	80	298
46	Beckwith Portable Family Sew'g Mach	$20 00	30	100
47	Lamb's Family Knitting Machine	$55 00	68	230
48	Washing Machine (Doty's)	$14 00	21	70
49	Clothes Wringer (Best—Universal)	$ 8 00	16	52
50	"Always Handy" Stove Shelves (American M'f'g Co)	$ 3 00	8	30
51	Pat. Magic Bellhead Pencil (Ludden & Taylor)	$ 1 50	4	....
52	Ladies' Magic Charm Pencil (do. do.)	$ 2 00	5	20
53	Gents' Magic Charm Pencil (do. do.)	$ 3 00	8	20
54	Gold Pen, Telescopic Case (do. do.)	$ 2 50	7	27
55	Gold Pen and Pencil, Telescopic Case, Elegant (do. do.)	$ 5 50	13	37
56	Melodeon, 4-oct'e (G. A. Prince & Co.'s)	$90 00	105	320
57	Piano, Splendid 7-oct. (Steinway & So's)	$650 00	625	1630
58	Silver Watch (American Watch Co.)	$40 00	50	165
59	Breech-loading Pocket Rifle	$16 00	24	80
60	Creedmoor Long Range Rifle (E. Remington & Sons)	$100 00	110	330
61	Target Rifle (E. Remington & Sons)	$56 00	68	230
62	Sporting & Hunting Rifle (do. do.)	$32 00	48	156
63	Double Barrel'd Breech-loading Gun (E. Remington & Sons)	$50 00	66	225
64	Charles Pratt's Astral Oil (1 can, 5gal.)	$ 2 85	7	27
65	Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)	$15 00	22	75
66	Cahoon's Broadcast Seed-sower	$10 00	18	58
67	Family Scales (Fairbanks & Co.)	$14 00	21	70
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71	Any Three do. do. do.	$ 5 25	13	37
72	Any Four do. do. do.	$ 7 00	15	47
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74	Any Six do. do. do.	$10 50	19	61
75	Any Seven do. do. do.	$12 25	21	68
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80	Any Three do. do. do.	$ 7 50	16	45
81	Any Four do. do. do.	$10 00	18	60
82	Any Five do. do. do.	$12 50	21	71
83	Any Six do. do. do.	$15 00	24	82
84	Any Seven do. do. do.	$17 50	27	92
85	Any Eight do. do. do.	$20 00	30	102
	(Each add'l Vol. at same rate.)		....	....
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88	A $15 Library do.	$15 00	24	85
89	A $20 Library do.	$20 00	31	106
90	A $25 Library do.	$25 00	38	125
91	A $30 Library do.	$30 00	44	144
92	A $35 Library do.	$35 00	50	162
93	A $40 Library do.	$40 00	56	177
94	A $45 Library do.	$45 00	62	192
95	A $50 Library do.	$50 00	68	207
96	A $60 Library do.	$60 00	80	237
97	A $75 Library do.	$75 00	100	282
98	A $100 Library do.	$100 00	125	360
99	A Choice of Good Books. (See Description.)			

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 451.

Remedy for Wheat Running to Straw.—"W. L. H.," Hardin Co., Ky. When wheat runs to straw instead of grain, the soil is probably too rich in vegetable matter, and a good dressing of lime will be useful. Although the soil may be what is known as a limestone soil, or rests upon limestone rock, it may need lime as much as any other soil. Limestone is not lime, and is inert, while lime has a very powerful effect, not only upon organic matter, (such as vegetable matter in the soil), but upon the mineral matter of the clay itself, and thus limestone clays are frequently benefited by the application of lime. Fifty bushels of fresh lime, dry, or air slacked into powder, may be applied after plowing in the spring, and harrowed in for a corn crop. Oats rarely do well after lime.

Shropshire Sheep.—"W. L. H." There are several good flocks of Shropshire sheep in this country, where they do well. Lambs can be procured of H. M. Cochrane, of Compton, (P. of Q.), Canada, and of Berosus Cook, Otego, N. Y., who gained the first premium at the last N. Y. State fair, for Shropshire sheep.

Double Plow.—"F. B.," Adams Co., Neb. The double plows in use in the west, of which the Deere plows are excellent examples, will do practically as good work, (and much more easily and quickly), as the English double furrow plows, which are too heavy to suit the American taste. They will not do the work so beautifully nor so accurately as the English plows, but we must sacrifice something that is not essential, when we have to plow with the sun beating down upon our heads to the figure of 110 or 120 degrees. Under these circumstances many would rather ride upon a gang plow, than handle a double furrow plow which weighs over 500 pounds. An English plowman, who has often at every bout, to blow upon his fingers, numb with cold, to warm them, may like the exercise of handling these heavy plows, but American farmers do not.

Abscess on a Mare's Head.—"Young Farmer." A running abscess might be treated by injecting warm water, in which to every ounce 10 grains of carbolic acid is dissolved, and thus washing it thoroughly every day. At the same time half an ounce of sulphite (not sulphate) of soda should be given daily in the food for a week or two. A plug of lint should be kept in the hole, to prevent it from closing until the bottom heals.

Short-horns for a California Dairy.—Mr. Robert Ashburner, of San Mateo Co., Cal., has recently imported a few choice Short-horns, from some of the best herds in England, for his dairy in California. It is not generally supposed that a herd of pure high-bred Short-horns could be valuable for the dairy, but Mr. Ashburner finds them the best for his purpose, which is the production of milk for the city of San Francisco. Several of his pure bred cows give six gallons of milk daily. The importation consists of 6 cows and heifers, viz: "Rose Ruby 2nd"; "Oxford Minstrel 2nd"; "Cherry Oxford 2nd"; "Dame Gwynn"; "Lightburn Gwynn," and "Oxford Elvina"; and 4 bulls, viz: "Amethyst"; "Kirklevington Duke 2nd"; "Second Prince of Lightburn," of the "Princess" family, and "Famous Knight"; the latter being "Booth" stock, all the rest are "Bates."

Grinding Bones.—"S. S. W.," Lancaster Co., Pa. Where a hundred tons of bones could be procured in a year, it would pay to put up a mill and grind them. This would be the least quantity that could be made profitable. The Bogardus eccentric mill costs $350 and upwards, and could be run with a six horse lever-power. The most convenient plan would be for some country grist or saw mill, or plaster mill, to attach the bone mill to their machinery in a cheap outside shed, and do this business for the neighborhood; buying the bones for $20 a ton, and selling the bone dust for $30 a ton, which are the usual rates.

The Potato Rot.—C. K. Brown, Ill., writes that he has paid considerable attention to the potato rot question, and is "satisfied that it is due to two causes: 1st. Degeneration. 2nd. The want of one of the preserving qualities in our soil, namely lime."—By degeneration we suppose he means the degeneration of the

tuber, but unfortunately for this view, the potatoes in South America growing wild, are also afflicted by the rot; and in both England and in this country the disease appears in limestone districts; and it is not found that lime applied to the land, or the use of any other fertilizer, has any marked influence in preventing the disease. Its occurrence is, however, largely governed by conditions of the weather.

"Walks and Talks" Correspondence.

CROSSING COTSWOLDS WITH MERINO SHEEP.—J. F. Longley, of Maine, writes: "Have I done right in purchasing grade and full blood Merino ewes to cross with a thoroughbred Cotswold buck? Why I ask the question is because some breeders in this vicinity, who claim to know, say that the cross should be made with a Merino buck and Cotswold ewes, as the Merino ewes cannot give birth to the large Cotswold lambs with safety, also that they do not give milk enough to support the lambs."—*Ans.* I have made this cross, and my ewes have not experienced the slightest difficulty at lambing time. I know there is a general impression that the Cotswolds are too large to cross with Merino ewes, but I have never known or heard of a well authenticated case in which there was any serious trouble. In regard to the supply of milk, I do not feel so confident. My own Merino and grade Merino ewes suckle their lambs well. But doubtless much depends on the food—not merely at the time, but previously. My Merino ewes run with the flock of thoroughbred Cotswolds, and have better food than most farmers give common sheep. Perhaps this is the reason why I have had such "good luck" with the lambs. Then again, we *feed the lambs* as soon as they will eat. This they will do at two or three weeks old. And this makes the lambs less dependent on the mother's milk. In regard to using Merino rams on Cotswold ewes, if our object was to get smaller sheep, that took longer to mature with shorter and finer wool, and if Cotswolds and their grades were the common sheep of the country, *then* the plan, recommended by the breeders you have alluded to, would be a good one; but if, on the other hand, large, long-wool ewes are scarce, and Merino grades are abundant and cheap, and if we desire larger sheep, that will grow rapidly and fatten easily, and produce longer wool, or if we want large, early lambs for the butcher, *then* the true plan is to use a thoroughbred long-wool ram on the best and cheapest ewes you can find.

FEEDING POTATOES.—P. H. Mertz, White Co., Ind., writes: "Does it pay to feed potatoes *raw* to cattle? I have about 700 bushels, and 30 head of two-year old steers. Will it pay to put the potatoes through my steers? I have a large frost-proof cellar."—*Ans.* I think I should let the potatoes stay in the cellar until spring, say March, April, and May, and then feed them moderately to all my stock. Potatoes can be fed to better advantage in the spring than during the cold weather in winter.... "I know that you say *boil* potatoes; but why not feed them raw, same as other roots?"—Potatoes are *not* roots. They differ very essentially from beets, turnips, parsnips, carrots, etc. Both theory and practice seem to show that there is more advantage in cooking potatoes than there is in cooking roots.

FRESH MUCK FOR CORN.—Mr. M. further asks: "Is it a good plan to haul muck direct from the pit on to a field intended for corn next spring?"—*Ans.* I think not. It is better to compost it with manure, lime, or ashes. If used raw, I would draw it on to grass land that was not to be plowed until next autumn, or the spring following, and spread it on the land. The exposure to the atmosphere will "sweeten" it, and render it less reluctant to give up its valuable plant-food.—"I know," says Mr. M., "you will tell me to haul it to the barn and compost it, but it is very convenient to the field and not so to the barn. Labor is high and grain is cheap; land is poor, and farmer ditto; every dollar must count a hundred cents when applied to labor, or both ends won't meet. But it is encouraging to read Walks and Talks. Long may he live!"—Thanks. I have felt the need of encouragement myself so much, and so often, and so long, that I am very glad if anything I say or do, or leave undone, affords the slightest encouragement to others. But in regard to the muck, it is not necessary to draw it to the barn. You can draw the manure or the lime and ashes to the field when you are drawing the muck, and make a heap in some convenient spot. I do not feel sure that it will pay you to use the muck. But if it is easily obtained, it is certainly well worthy of trial.

FINE-BONED PIGS.—"B. L. Y.," of Kentucky, wrote to the *American Agriculturist* as follows: "I wish to get some fine-boned pigs of a pure breed. Which would you recommend as most desirable—Berkshire, English Chester, or Essex, or is there some better breed? I do not think I have ever seen the Essex."—The editor of the *American Agriculturist* advised him to get the Essex. He cannot do better, unless he wants a *white* breed, and in that case I should select the Suffolk or small Yorkshire. I do not know of any English Chesters. The Chesters, or Chester Whites, are an American breed, originating in Chester Co., Pa. They are not "fine-boned"—less so than Berkshire, small Yorkshire, Suffolk, or Essex.

FATTENING STEERS.—T. Bacon, Lake Co., Ill., asks: "How much ought good thrifty native steers, two and three years old, with warm stable and good care, to gain in feeding five months, and what is it worth per lb. of *increased weight* with corn-meal at $20 per ton, bran $15; shorts $20@$23 per ton; potatoes 25 cents per bushel; wild hay $7, and herds' grass and clover $10 per ton?"—This is a very difficult question to answer. On a rough estimate I should say that thrifty native steers, weighing 1,000 lbs. live weight, would each eat in the five months about 3,500 lbs. of hay and 1,500 lbs. of corn-meal, and would gain 375 lbs. At the prices named, the hay would cost $17.50, and the corn-meal $15. Total cost of food in five months $32.50. This food gives a gain of 375 lbs., and consequently the increase costs a little over 8⅔ cents per lb. I take corn-meal and hay, because these are cheaper *for food* at the figures given than bran, shorts, or potatoes. It should be remembered that this *increase* is real meat and fat. Each pound of such increase is worth to the consumer two or three times as much as a pound of the average live weight of a thin steer. And the butchers and consumers are beginning to understand this. They will pay more for a well fed, ripe steer than for a thin one. I presume Mr. Bacon can buy good thrifty native steers for 3¾ cents per lb. And after feeding them five months, he can sell them for 6 cents. The account will then stand:

Dec. 1st, 1875—one steer, 1,000 lbs., @ 3¾c....	$37.50
Feed, 5 months.....	32.50
	$70.00
May 1st, 1876—one steer, 1,375 lbs., @ 6c.,	$82.50

MAKING HOGS FAT.—H. L. Leonard, Dallas Co., Iowa, writes: "I have an idea that it costs more for the first 100 lbs. on a hog than for any other hundred lbs. that is put on. Many sell their hogs when they are about 300 lbs. weight, but I think that I can put on 100 lbs. cheaper after they weigh 300 lbs. than before. What is your opinion?"—I think the last 100 lbs. requires *more food* to produce it than the first 100 lbs. Still, I think farmers often sell their hogs before they are fat enough. This year, especially, I think farmers will do well to make their hogs fat before selling them.

TOP-DRESSING FOR MEADOW.—"W. C. M." proposes to use all the manure that he makes this winter as a top-dressing for a meadow, and he asks if he had better draw it out fresh from the yard and stables and spread it on the meadow, or "pile it up in the barn-yard until March, and haul and spread it then?"—I should prefer to pile it and let it ferment. If more convenient, you can draw it to the field and make it into a pile there, instead of in the barn-yard. Or, better still, make it into a pile in the yard, as described last month, and sometime during the winter draw it to the field and make it into a pile there. This is the same thing as "turning" the pile.

MAKING HAY INTO GRASS.—In reply to "M. P. S.," I would say that grass contains about 75 lbs. in the 100 lbs. of water. We make it into hay by evaporating about 70 lbs. of the water. This leaves us 30 lbs. of hay. To convert it back into grass, we should take 30 lbs. of hay, cut it into chaff, and add 70 lbs. of water. But it is not necessary to add so much for winter feed. A bushel of cut hay weighs about 8 lbs. If to this you add 5 quarts of boiling water, that will be enough. Let it steep 12 hours, and cover it up to keep in the heat. The more cows you keep and the larger the quantity mixed at a time, the longer it will keep warm. I have adopted this plan to a considerable extent, and think it is nearly as good as steaming. In fact, unless we add the same quantity of water to moisten the hay before steaming, I think this steeping in boiling water is the better plan.

A Fence Upon a Dike.—"W. W.," Washington Terr. A plan of making a fence upon a bank or dike, was given in the *American Agriculturist* for June, 1875. Such a fence should be of posts and rails, and two or three rails would be sufficient. Wire would be still better where there are heavy winds.

Milkweed Poisonous to Goats.—The California papers speak of a herd of 2,000 Angora goats, taken to stock a ranch in Arizona, which, on their way through the Mohave country, took to eating milkweeds, with such fatal effect, that a quarter of the flock died at once, and there was danger that the whole number would perish. There are two or three large and downy milkweeds in that region, which have probably done the damage—though it is a new thing for milkweeds to poison animals. We are sorry for the owner, and for the goats. But sheep are so hard on the botany of California, and goats will be worse—that there is a fitness of things in the plants taking their revenge. Very likely these goats came from the colony on Guadalupe Island, where Dr. Palmer lately went to botanize. Of the many new plants he found there, he writes that, while they evidently had formerly been abundant, specimens could now be obtained only with great difficulty by clambering, and the use of a hook on the end of a long pole.

N. Y. State Dairymens' Association.—The fifth annual convention of the New York State Dairymens' Association, will be held at the Court House at Norwich, N. Y., on Wednesday and Thursday, December 8th and 9th, 1875. Several papers will be read and addresses made; an exhibition of butter, cheese, and dairy utensils also will be held, in which dairymen are invited to compete.

Suffolk Pigs.—"H. H. W.," Otego, N. Y. The Suffolk pigs are a small white breed, taking the place amongst white pigs which the Essex holds amongst the black breeds. It is a race of small boned, rapidly maturing pigs, well adapted for market or family use.

A Southern Fair will be held in New Orleans, beginning Feb. 26th, 1876, and continuing 10 days. It will be called the Southern States Agricultural and Industrial Exposition, and be held under the auspices of the Mechanics and Agricultural Fair Association of La., aided by a Special Commissioner in each southern state. Manufacturers and producers everywhere are invited to exhibit. For particulars apply to the Gen'l Superintendent, Samuel Mullen, 80 Camp st., New Orleans.

Thomas' Fruit Culturist.—The American Fruit Culturist, by John J. Thomas, has often received our commendation as one of the very best works of its kind. The publishers, Wm. Wood & Co. have recently issued a new edition upon large and fine paper, and embellished it with a remarkably handsome colored frontispiece, and tasteful binding; this edition is intended to be sold by canvassers only, and is not in the regular trade at all.

Sheep Husbandry in Georgia.—The advantages offered by Georgia for the successful growth of wool are well set forth in a small but valuable pamphlet recently issued by the Commissioner of Agriculture of that state, Thomas P. Janes, Esq. Atlanta. The pamphlet contains the experience of a large number of the most prominent sheep owners of the state, (one of whom has a flock of 3,500), given in reply to an exhaustive series of pertinent questions. The result shows that sheep culture returns an average profit of 63 per cent per annum; that the only drawback is the 99,415 dogs which annually destroy 15 per cent of the sheep; that the ignorantly dreaded "wire" and "Bermuda" grasses will feed 5 sheep to an acre for 9 months in the year, and that fodder crops, easily grown, will support 20 to 30 sheep per acre for the rest of the year, and that 100 sheep folded on 8 acres of ground, will so fertilize it, that the crops are immediately doubled. Land suitable for such management as this can be purchased for $1.50 to $10 an acre, and the climate permits of out-door pasturing without shelter during the whole year. For the culture of fine wool sheep, few localities could offer greater facilities, and as for the dogs, no energetic shepherd need fear them; although in general estimation they may be considered more highly than the sheep. Ordinary precautions against them will be sufficient protection in the majority of cases.

Sales of Short-horns in Kentucky.—At the series of public sales of Short-horn cattle recently held in Kentucky, there were 1,132 head disposed of for the aggregate sum of $460,587, or an average of more than $400. Some of these cattle were of the fashionable sorts, and brought high prices; many of them as much as $2,000 each, and over; the highest price paid was $17,500 for a 3-months old calf, the 22nd Duchess of Airdrie; the lowest prices were for some of the unfashionable stock known as the "Seventeens," or the descendants of the importations of 1817. These cattle sold for an average of about $50 per head; calves of this sort selling for only $20. The difference between $20 and $17,500 for a calf, represents the difference in the estimated value of fashion, or of what is known as pedigree. This is putting this point rather strongly, nevertheless there are many breeders of beef cattle who would as soon choose a "Seventeen" as a Duchess for his purposes. Fortunately no harm is done by these fancy prices, excepting so far as an undeserved and invidious comparison may be made against intrinsically valuable stock, but which is not of the fashionable blood, and their market value be depressed in consequence. This comparison has palpably operated in reducing the prices of good Short-horns at these sales; but although the sellers have suffered, the buyers have gained by it, and hundreds of excel-

lent animals have been scattered abroad where their good influence will be widely felt. The names of the sellers, and the particulars of each sale, are as follows:

Sales.	*No. Sold.*	*Am't Realized.*	*Av. Price.*
Vanmeter and Farra	65	$ 6,120	$ 102 00
Dr. J. J. Adair	33	4,385	132 88
Wesley Warnock	80	30,180	377 25
B. B. Groom & Son	73	123,450	1,691 09
H. P. Thompson	96	53,080	552 91
North Elkhorn Imp. Co.	80	49,800	622 50
J. C. Jenkins	15	19,010	1,267 33
Jas. H. Davis	26	6,950	267 31
Patterson & Corbin	58	19,700	339 65
Jno. A. Gano, sr	37	7,137	192 89
B. P. Goff	70	19,416	277 28
Vanmeter & Sudduth	93	24,380	262 15
Jno. W. Prewitt	68	22,500	330 88
Redmon Bros	31	6,840	220 64
H. F. Judy	40	6,835	170 88
Joseph Scott & Co	116	22,895	197 11
F. J. Barbee	20	6,770	338 50
Ayres, McClintock & Co	99	29,265	295 61
E. C. Bryan	37	1,910	51 60
Total 19 herds	1,132	$460,587	

Sheep-Keeping on the Plains.—"L. A. F.," St. Louis, Mo. It would hardly pay to start sheep-keeping on the plains with less than one or two thousand sheep, or without having an experienced shepherd. To start with less would require the business of two or three years to be done at a loss. The amount needed to start may be gathered from what was actually done by Mr. M. E. Post, whose ranche is 12 miles from Cheyenne in western Nebraska. An extract taken from his books shows the following account of cost and income from December 1st, 1873, to August 1st, 1874, viz:

1873.	Dr.
Dec. 1, Cost of 1,650 Mexican wethers at $2	$3,300 00
" " Cost of 1,530 Mexican ewes at $2.50	3,875 00
" " Cost of 22 Merino rams	465 00
1874.	
Feb. 27, Cost of 203 wethers	366 75
Horses, wagon, tools, etc	600 00
Cost of improvements	1,000 00
40 tons of hay at $8	320 00
85 sheep lost	212 50
Aug. 1, Labor, including shearing, marketing herding, etc	1,441 81
Total	$11,581 06
RETURNS.	CR.
1,800 wethers sold at $2.50	$4,500 00
Wool sold	3,300 00
85 pelts	106 25
	$7,906 15
STOCK ACCOUNT.	
1,515 ewes on hand at $2.50	3,757 50
1,200 lambs, at $3	3,600 00
22 rams	465 00
Horses, etc., and improvements	1,600 00
	$17,328 75

Balance, profit, $5,747 69.

Turnip Drill.—"A. K. F.," Richmond, Va. We do not know of any turnip drill for field work, made in this country, that sows two rows at once, and rolls the drills at the same time. A very excellent iron drill of this kind is made by a Scotch manufacturer, and a few have been imported by some farmers of our acquaintance who raise roots largely. The cost is about $80. We have used the Emery drill which sows one row at a time, and also rolls the ground. This may be operated by one man who can sow 8 acres in 10 hours, if the soil is in proper mellow condition.

Brittle Hoofs.—A "Subscriber," Sevier Co., Ark. Horses or mules' hoofs are often rendered brittle by causing them to stand upon heated manure or filth in the stables, and sometimes by chronic "founder" or fever in the feet. If the first cause is suspected, it should be stopped at once, if the latter is the cause, it should be remedied by giving the horse some cooling medicine, placing the hoofs in a bath of water so hot that it can not be borne by the hand, and then smearing them with glycerine. The remedy may need to be repeated for some time, until all heat or fever is removed, when the glycerine dressing should be continued until the new growth of horn replaces the old one.

Pedigrees of Jersey Stock.—"H. D. W.," Beatystown, N. J. The pedigrees of any animals that have been entered in the American Jersey Herd-Book, can be obtained by writing to Col. Geo. E. Waring, jr., Secretary, Newport, R. I.

Cut Hides.—The Pennsylvania Farmer's Association recently held a meeting in Philadelphia for the purpose of procuring some combined action relative to cut hides. The western tanners have already combined to rate hides that have been cut in flaying, as second rate, and to accept as firsts only those hides that are clear and clean-flayed. It is necessary for those who skin or purchase hides, to remember that the value of hides which have been cut will hereafter be considerably reduced. This action has been rendered necessary by the greatly increased foreign trade in American leather, which is now competing favorably in many foreign markets with their own product.

Bone-dust for Clover.—"Q. T. L.," Cecil Co., Md. Bone-dust is not a sufficiently active fertilizer for clover. It is better for grass lands that are reserved for pasture than for crops that grow and mature quickly. Wood ashes, gypsum, and guano, either separately or applied together, early in the spring, would be more effective on clover than bone-dust.

Tanners' Refuse.—"S. D. C.," Moorestown, N. J., and others. The refuse from morocco and glue factories, consists chiefly of lime, hair, and scrapings of the skins. The lime is not caustic, but is nevertheless worth something, and the hair and animal matter has considerable fertilizing value. We have gladly paid two dollars a ton for this kind of waste, which we found to be an excellent top-dressing for grass, and a good thing to compost with swamp muck. This compost would be of great use on light soil. At some tanneries the fuel consists of spent oak and hemlock bark, which leaves an ash that is worth nearly as much as hard-wood ashes.

Time to Dig Drains.—"Inquisitive." It would be quite safe to dig drains in the early winter time. The frost may be kept from hindering the work by spreading straw or some litter along the line of the drain, or by plowing the ground as deeply as possible on the line, and leaving it loose and cloddy. When the work is left at night, the ground should be left loose, and if it should freeze, it may be readily broken up. The frost will not penetrate deeply beneath loose soil. If there is any risk of malaria from stirring the ground, we would leave the work until later.

Enema Syringe.—"A. H. K.," Richmond, Va. As good a syringe for giving injections to cattle as a costly metal one is a bladder and pipe of elder-wood, as described in the *American Agriculturist* of Nov., 1875.

Cost of a Poultry-House.—"J. J.," Philadelphia. For a house such as is illustrated in the October *American Agriculturist*, 30 feet long, and 24 feet wide, which is large enough for 300 fowls, there would be required the following, viz.: 4 sills 6x8 30 ft. long; 2 sills 6x8 24 ft.; 20 pieces studding 8 ft. 2x4; 20 pieces studding 14 ft. 2x4; 4 plates 30 ft. 2x6; 2 plates 24 ft. 2x6; 6 joists 10 ft. 2x6; 60 side boards 8 ft. long 12 inches wide; 60 side boards 14 ft. long 12 inches wide; 60 battens 1x2; 20 rafters 8 ft. 2x5; 40 rafters 6 ft. 2x5; 840 ft. roof boards; 300 ft. flooring for loft; in all about 3,800 ft. of lumber, board measure. Six batten doors, and as many windows as may be desired, at least six, will be needed, also 8½ squares of roofing felt. Crude petroleum would be the best material for paint, and next to that would be common lime-wash, colored slightly with any of the mineral browns, or ochers, to reduce the glaring white of the lime. The above specification does not include the fence, nor the nails, hinges, or glass, which are easily figured up.

Food for Pigs shipped by Express.—"H. H. F.," Somerset Co., Pa. The best food for young pigs shipped by express on a long journey, is a mixture of equal parts of corn-meal, ground oats, and rye-bran. The food should be placed dry in a bag, fastened to the box, so that the expressman may mix a portion with water, and feed it to the pigs at stated times. Full directions to the express agent for doing this should be printed upon a card, which is to be nailed conspicuously on the box. A fixed trough should be provided in the box.

Hollow-horn and Murrain.—"W. M.," Utah. These names are used to designate the symptoms of a variety of diseases. They represent no particular disease, and are as indefinite as the term "sickness." The horn of an ox is filled with a highly sensitive and vascular core, which is a prolongation of the frontal bone, and serves as a support to the horn. The horn is composed of the same materials as the skin and hair, and is not sensitive. It may be removed, leaving the core in its place, and is then hollow, as we are used to see it when separated from the head. These horn-cores are well supplied with arteries, veins, and nerves, and whenever from any cause the tissues of the head are inflamed or congested, the increased temperature of the parts is then felt in the horns more readily than elsewhere. When the contrary occurs, and from poverty, or excitement elsewhere, the supply of blood to the head is diminished, the loss of heat is felt first in the horns, and they are cold. This is generally the case when an animal is said to be affected by "horn-ail," or "hollow-horn." Then the quack recommends the horns to be bored with a gimlet, and pepper or turpentine to be injected, or turpentine to be burned upon the poll. This causes irritation and inflammation of the parts, restoring the heat, but it only makes the case and the suffering worse. The remedy ought to be sought in restoring the condition of the animal, by such medicine or food as the needs of the case call for. The diseases generally known as murrain are splenic fever and carbuncular erysipelas, (the latter also known as black quarter), which have been often described in the *American Agriculturist*.

Plaster on Grass-Land.—"G. F. D.," Old Town, Me. The proper time to apply plaster upon grass-land is when the growth has already begun in the spring. It is most easily spread with Seymour's broadcast sower, which will spread a bushel evenly over an acre of ground in less than an hour.

Support for a Corn Crib.—"F. H.," Westchester Co., N. Y. A rat-proof iron support or foundation for a corn crib was described and illustrated in the *American Agriculturist* for June, 1873, p. 217. Any of the back numbers of the *American Agriculturist* can be sent for 15 cents.

Quantities of Fertilizers used per Acre.—"C. A. M.," Denville, N. J. The quantities generally used per acre of the following named fertilizers are: Peruvian guano, 250 lbs.; bone-meal, or bone flour, 300 to 400 lbs.; superphosphate of lime, 200 lbs.; nitrate of soda, 150 lbs.; gypsum, 100 lbs.; dried blood, 250 lbs.; wood-ashes, 25 bushels of unleached, and 50 to 100 of leached, and lime 25 to 50 bushels. The most soluble of these are applied in the spring. Upon market gardens these quantities—except the ashes and lime—are often doubled.

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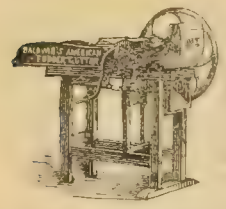

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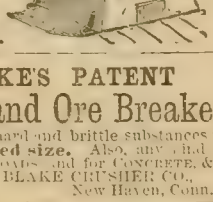

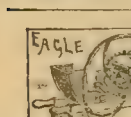

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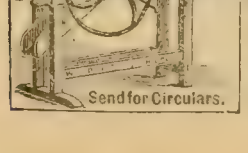

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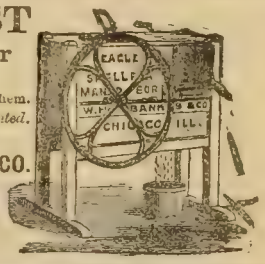

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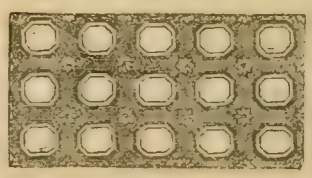

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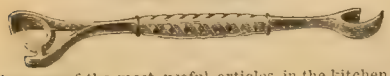

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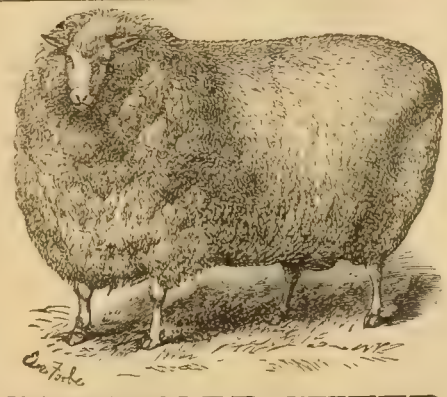

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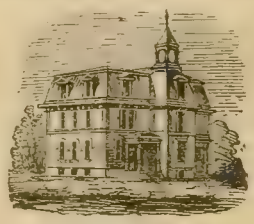

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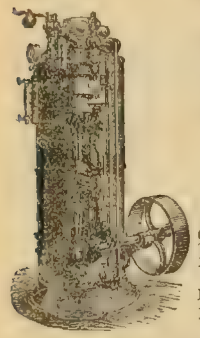

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